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UNITED STATES PATENT AND TRADEMARK OFFICE

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November 20, 1984 Volume 1048 Number 3

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1042 O.G. 45 on May 15, 1984.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of Feb. 14, 1984 and was announced in the *Official Gazette* at 1039 O.G. 142 on Feb. 21, 1984.

International PCT fees were changed by the PCT Assembly effective Jan. 1, 1984 and were announced in the *Official Gazette* at 1037 O.G. 12 on Dec. 13, 1983.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	620.00
International Fees	
Basic fee (first 30 pages)	295.00
Basic Supplemental fee (for each page over 30)	6.00
Designation fee (for each national or regional office)	70.00

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Apr. 13, 1984.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), effective Nov. 1, 1984. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Nov. 17, 1981 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Plant Patents	4,790 through 4,792
Utility Patents	4,300,240 through 4,301,543

Reissue Patents based on the above identified patents. No maintenance fees are required for design patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 200.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f))	$ 200.00
By other than a small entity	$ 400.00"

The amounts of the surcharges, effective Nov. 1, 1984, are set forth in 37 CFR 1.20(k)-(m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . $ 100.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity (§1.9(f))	$ 50.00
By other than a small entity	$ 100.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee on a patent based on an application filed on or after Aug. 27, 1982, where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . $ 500.00"

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,339,405, Re. S.N. 630,388, Filed July 13,1984, Cl. 264/108, METHOD OF ADHERING MINERAL DEPOSIT IN WOOD FRAGMENT SURFACES, Laszlo Paszner, Owner of Record: *Inventor,* Attorney or Agent: James P. O'Shaughnessy, et al., Ex. Gp.: 137

4,340,291, Re. S.N. 629,687, Filed July 11, 1984, Cl. 354/215, WARNING INDICATOR FOR A CAMERA, Floyd L. Berg, Owner of Record: *Inventor,* Attorney or Agent: Richard P. Berg, Ex. Gp.: 211

4,341,092, Re. S.N. 635,000, Filed July 27, 1984, Cl. 062/475, LIQUID MODULATOR, William G. Davis, Owner of Record: *Liquid Modulators, Inc.,* Attorney or Agent: Neal J. Mosely, Ex. Gp.: 344

4,343,300, Re. S.N. 639,150, Filed Aug. 9, 1984, Cl. 128/006, DATA TRANSMISSION SYSTEM FOR AN ENDOSCOPE APPARATUS, Shinichiro Hattori, Owner of Record: *Olympus Optical Co., Ltd., Tokyo, Japan,* Attorney or Agent: Robert Osann, et al., Ex. Gp.: 335

4,344,521, Re. S.N. 640,322, Filed Aug. 10, 1984, Cl. 198/404, APPARATUS FOR CONVEYING ROD-LIKE ARTICLES, David S. Bennett, et al., Owner of

Record: *Molins, Ltd., High Wycombe, England,* Attorney or Agent: Donald R. Antonelli, et al., Ex. Gp.: 317

4,347,040, Re. S.N. 636,442, Filed July 31, 1984, Cl. 416/190, BLADE TO BLADE VIBRATION DAMPER, John C. Jones, et al., Owner of Record: *United Technologies Corp., Hartford, Conn.,* Attorney or Agent: Robert C. Walker, Ex. Gp.: 341

4,358,873, Re. S.N. 636,494, Filed Aug. 1, 1984, Cl. 017/033, PROCESS AND APPARATUS FOR AUTOMATED MANUFACTURE OF LINK SAUSAGES HAVING CASINGS FORMED OF SYNTHETIC TUBULAR MATERIAL, Gunter Kollross, Owner of Record: *Inventor,* Attorney or Agent: Roberts B. Larson, et al., Ex. Gp.: 327

4,360,255, Re. S.N. 640,865, Filed Aug. 15, 1984, Cl. 354/410, METHOD AND APPARATUS FOR TRANSMISSION OF INFORMATION IN A PHOTOGRAPHIC CAMERA, Masahiro Kawasaki, Owner of Record: *Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-To, Japan,* Attorney or Agent: C. Russell Hale, et al., Ex. Gp.: 211

4,386,763, Re. S.N. 637,888, Filed Aug. 6, 1984, Cl. 266/158, LANCE MOUNTED SPRAY APPARATUS, Leo L. Meinert, et al., Owner of Record: *Pullman Berry Co., Harmony, Pa.,* Attorney or Agent: Richard J. Myers, Ex. Gp.: 111

4,387,995, Re. S.N. 641,188, Filed Aug. 15, 1984, Cl. 366/002, PORTABLE CONCRETE MIXING AND TRANSPORT APPARATUS, Edwin J. Routson, Owner of Record: *Inventor,* Attorney or Agent: Thomas R. Juettner, et al., Ex. Gp.: 242

4,408,200, Re. S.N. 638,340, Filed Aug. 6, 1984, Cl. 340/747, APPARATUS AND METHOD FOR READING AND WRITING TEXT CHARACTERS IN A GRAPHICS DISPLAY, David J. Bradley, Owner of Record: *International Business Machines Corp., Armonk, N.Y.,* Attorney or Agent: Richard C. Sughrue, et al., Ex. Gp.: 264

4,420,159, Re. S.N. 622,957, Filed June 21, 1984, Cl. 277/34, PACKER VALVE ARRANGEMENT, Edward T. Woods, Owner of Record: *Completion Tool Co., Houston, Tex.,* Attorney or Agent: Donald H. Fidler, Ex. Gp.: 246

4,436,907, Re. S.N. 636,644, Filed Aug. 1, 1984, Cl. 544/335, BENZYL-PYRIMIDINYLALKYL-ETHERS AS PLANT GROWTH REGULATORS AND FUNGICIDES, AND CORRESPONDING PYRIMIDINYL-CARBINOLS, Graham Holmwood, et al., Owner of Record: *Bayer Aktiengesellschaft, Leverkusen, Germany,* Attorney or Agent: Arnold Sprung, et al., Ex. Gp.: 122

4,438,693, Re. S.N. 638,370, Filed Aug. 7, 1984, Cl. 101/129, SILK SCREEN PRINTING ONTO THE FRONT PANEL OF A CAP, Russell A. Serriane, et al., Owner of Record: *R. Jennings Manufacturing Co., Inc.,* Attorney or Agent: John W. Malley, et al., Ex. Gp.: 337

4,451,073, Re. S.N. 639,246, Filed Aug. 9, 1984, Cl. 294/57, FLEXIBLE CORE FOR TOOL HANDLES, Joseph A. Carmien, Owner of Record: *Inventor,* Attorney or Agent: Scott W. Kelley, et al., Ex. Gp.: 313

4,453,542, Re. S.N. 638,068, Filed Aug. 6, 1984, Cl. 128/200.21, VORTEX-GENERATING MEDICAL PRODUCTS, Nathaniel Hughes, Owner of Record: *Vortran Corp.,* Attorney or Agent: C. Russell Hale, et al., Ex. Gp.: 335

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

Design Pat. 267,873, Reexam. No. 90/000,637, Requested: Sept. 24, 1984, Cl. D14, BASE FOR A TELEPHONE SET, Wilbert C. Brown, et al., Owner of Record: *Tie/Communications, Inc., Shelton, Conn.,* Attorney or Agent: Francis N. Carten, Ex. Gp.: 290, Requester: Toshiba Corp., Tokyo, Japan

3,928,163, Reexam. No. 90/000,629, Requested: Sept. 17, 1984, Cl. 204/206, SPARK DISCHARGE AND ELECTRO-CHEMICAL EROSION MACHINING APPARATUS, Werner Ullmann, et al., Owner of Record: *A. G. Fur Industrielle Elektronik Agie, Lucerne, Switzerland,* Attorney or Agent: Flynn & Frishauf, Ex. Gp.: 110, Requester: IJR, Inc., Yokohama, Japan

3,976,332, Reexam. No. 90/000,649, Requested: Oct. 12, 1984, Cl. 406/14, POWDER FEED DEVICE FOR FLAME SPRAY GUNS, Arthur J. Fabel, Owner of Record: *Metco, Inc., Westbury, N.Y.,* Attorney or Agent: Herbert S. Ingham, Ex. Gp.: 310 Requester: Owner

4,081,429, Reexam. No. 90/000,652, Requested: Oct. 18, 1984, Cl. 528/48, HEAT-STABILIZED POLYURETHANE ELASTOMER, Ransome J. Wyman, et al., Owner of Record: *Arnco, Marina del Rey, Calif.,* Attorney or Agent: Herbert E. Kidder, Ex. Gp.: 153, Requester: Arnco, et al., Los Angeles, Calif.

4,113,147, Reexam. No. 90/000,648, Requested: Oct. 12, 1984, Cl. 222/131, VACUUM BOTTLE WITH AIR PUMP TO PRESSURIZED BOTTLE TO EFFECT DISPENSING, Albert A. Frazier, et al., Owner of Record: *Inventor,* Attorney or Agent: McDougall, et al., Ex. Gp.: 311, Requester: King-Seeley Thermos Co., Bloomfield Hills, Mich.

4,166,997, Reexam. No. 90/000,654, Requested: Oct. 18, 1984, Cl. 338/5, LOAD DISC, Walter p. Kistler, Owner of Record: *Kistler-Morse Corp., Bellevue, Wash.,* Attorney or Agent: Seed, et al., Ex. Gp.: 213, Requester: Oblon, et al., Arlington, Va.

4,203,444, Reexam. No. 90/000,650, Requested: Oct. 18, 1984, Cl. 604/22, SURGICAL INSTRUMENT SUITABLE FOR CLOSED SURGERY SUCH AS OF THE KNEE, Leonard J. Bonnell, et al., Owner of Record: *Dyonics, Inc., Woburn, Mass.,* Attorney or Agent: John Noel Williams, Ex. Gp.: 336, Requester: American Sterilizer Co., Erie, Pa.

4,416,844, Reexam. No. 90/000,651, Requested: Oct. 17, 1984, Cl. 264/267, DEFLATION-PROOF PNEUMATIC TIRE AND ELASTOMERIC FILLINGS THEREFORE, Ransome J. Wyman, Owner of Record: *Ransome J. Wyman, Calabasas, Calif.,* Attorney or Agent: Nilsson, et al., Ex. Gp.: 130, Requester: Owner

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Department of the Treasury
United States Custom Service
Application for Recordation of Trade Name:
"L.A. GEAR CALIFORNIA, INC."

Agency: U.S. Customs Service, Department of the Treasury

Action: Notice of Application for Recordation of Trade Name

Summary: Application has been filed pursuant to section 133.12, Customs Regulations (19 CFR 133.12), for the recordation under section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name "L.A. GEAR CALIFORNIA, INC." used by L.A. Gear California, Inc., a corporation organized under the laws of the State of California, located at 122 W. 25th St., Los

Angeles, Calif. 90007. The application states that the trade name is used in connection with the following merchandise manufactured in Hong Kong, Taiwan, Korea, Brazil and the United States: men's, women's and children's sportswear (specifically shirts, skirts, shorts, pants, dresses, jackets and jumpsuits); footwear, fashion accessories (specifically hosiery, leather and nylon handbags, and carrying bags).

Before final action is taken on the application, consideration will be given to any relevant data, views, or arguments submitted in writing by any person in opposition to the recordation of this trade name. Notice of the action taken on the application for recordation of this trade name will be published in the Federal Register.

Date: Comments must be received on or before Nov. 26, 1984.

Address: Written comments should be addressed to the Commissioner of Customs, Attention: Entry, Licensing and Restricted Merchandise Branch, 1301 Constitution Ave., NW., Rm. 2417, Washington, D.C. 20229.

For Further Information Contact: Harriet Lane, Entry, Licensing and Restricted Merchandise Branch, U.S. Customs Service, 1301 Constitution Ave., NW., Washington, D.C. 20229 (202-566-5765).

DONALD W. LEWIS,
Sept. 18, 1984. *Director, Entry Procedures, and Penalties Division.*

Errata

"All reference to Patent No. 4,479,014 to Sargis Khoobiar of N.J. for 'CONVERSION OF ISOBUTANE TO METHACROLEIN' appearing in the Official Gazette of Oct. 23, 1984 should be deleted since no patent was granted."

"All reference to Patent No. 4,479,193 to Akira Kanuma of Calif. for 'PRIORITY DETERMINATION CIRCUIT' appearing in the Official Gazette of Oct. 23, 1984 should be deleted since no patent was granted."

Examination

Pursuant to the provisions of 37 C.F.R. 1.341(c), an examination for persons seeking registration before the United States Patent and Trademark Office as patent attorneys and agents will be held on Tues., Apr. 9, 1985.

With the exception of those persons who actively served four years in the examining corps of the Patent and Trademark Office for whom the examination is waived, all persons recognized for practice before the Patent and Trademark Office in patent cases must pursuant to the noted rule, pass the examination. Those passing the examination do not thereby qualify for recognition for practice before the Patent and Trademark Office in trademark cases. Recognition for practice in trademark cases is governed by Rule 2.12 of the Trademark Rules of Practice, which does not require the passing of an examination.

37 C.F.R. 1.341(f) provides, in pertinent part, "Officers and employees of the United States who are disqualified by statute (18 U.S.C. 203, 205) from practicing as attorneys or agents in proceedings or other matters before Government departments or agencies, may not be registered, * * * but officers or employees whose official duties require the preparation and prosecution of applications for patent may be registered (on compliance with the regulations in this part) or recognized to practice, to the extent necessary to carry out their official duties." If a person is an officer or employee of the United States who is not disqualified for registration under 37 C.F.R. 1.341(f) when that person applies to take the examination, that person's application for registration *must* be accompanied by his or her supervisor's *verified statement* that his or her official duties as a United States officer or employee require him or her to prepare and prosecute applications for patent. If, after applying, a person becomes an officer or employee of the United States, and is not disqualified for registration under 37 CFR §1.341(f), that person must submit the same verified statement from his or her supervisor, preferably promptly upon his or her employment. After passing the examination, a person may be considered eligible for registration. If a person is disqualified for registration under 37 C.F.R. 1.341(f) when he or she applies; or becomes so disqualified after applying, but before he or she is registered, approval of his or her application to take the examination will be subject to the following conditions.

1. If the person passes the examination, that person will not be registered so long as he or she remain disqualified for registration under 37 C.F.R. 1.341(f). However, if within one (1) year from the date notification of passing is mailed, that person's status changes and he or she is no longer disqualified under 37 C.F.R. 1.341(f), that person will be considered eligible for registration upon satisfactory proof of his or her change in status.
2. If a person has not become registered within one (1) year from the date notification of passing is mailed, that person may not become registered thereafter except upon taking and passing another regularly scheduled examination.

Under Section 1.341(c), persons seeking registration must submit "satisfactory proof of good moral character and repute, and of sufficient basic training in scientific and technical matters." The initial submissions of many persons are inadequate, and they must be supplemented before applicants are approved to take the examination. To afford adequate time to present a satisfactory supplemental showing, it is recommended that persons file their applications early, preferably at least two months before the Jan. 31, 1985 closing date set out *infra.* All supplemental showings of qualifications and all applications received after Jan. 31, 1985 will be considered only in connection with their admission to the next succeeding examination.

The examination will be given under the supervision of the office of Personnel Management (formerly Civil Service Commission), and may be taken in many of the cities in which the Office of Personnel Management regularly conducts examinations.

Jan. 31, 1985 is the final date for receipt in the Patent and Trademark Office of applications to take the examination together with a $75 fee and all necessary sati sfactory showings required by 37 CFR §1.341(c).

Application blanks may be obtained from the Clerk, Office of Enrollment and Discipline, Bldg. 3, 10th Floor, Rm. D27, Crystal Plz., Arlington, Va. or by mail addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, and directed to the attention of the Clerk, Office of Enrollment and Discipline.

WILLIAM FELDMAN,
Director, Office of Enrollment and Discipline.

U.S. GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by agencies of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve expeditious commercialization of results of federally funded research and development. Foreign patents are filed on selected inventions to extend market coverage for U.S. companies and may also be available for licensing.

Technical and licensing information on specific inventions may be obtained by writing to:

Office of Federal Patent Licensing
U.S. Department of Commerce
P.O. Box 1423
Springfield, Va. 22151

Please cite the number and title of inventions of interest.

DOUGLAS J. CAMPION,
Office of Federal Patent Licensing
National Technical Information Service
U.S. Department of Commerce.

DEPARTMENT OF AGRICULTURE

SN 6-288,261 (4,472,377). METHOD AND COMPOSITION FOR LURING COYOTES.

SN 6-347,129 (4,471,570). RECIRCULATING WIPER FOR AGRICULTURAL CHEMICALS.

SN 6-467,068 (4,471,531). METHOD AND APPARATUS FOR MEASURING PRESS ROLL CLEARANCE.

SN 6-526,752 (4,472,167). MILD-CURE FORMALDEHYDE-FREE DURABLE-PRESS FINISHING OF COTTON TEXTILES WITH GLYOXAL AND GLYCOLS.

SN 6-643,990. METHOD FOR DETECTING AFLATOXIN IN ALMONDS.

DEPARTMENT OF COMMERCE

SN 6-636,769. HEAT PIPE OVEN MOLECULAR BEAM SOURCE.

DEPARTMENT OF HEALTH AND HUMAN SERVICES

SN 6-414,904 (4,471,646). BLOOD PRESSURE CUFF CALIBRATION SYSTEM.

SN 6-602,520. SUBSTANTIALLY PURIFIED TUMOR GROWTH INHIBITORY FACTOR.

Adverse Decisions in Interference

In the designated interference involving the indicated claims of the following patents, final decision having been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 4,035,638, Abraham Szoke, Isaiah Nebenzahl, ISOTOPE SEPARATION, Interference No. 100,891, decided June 19, 1984, Claims 5, 6, 13, 16 and 17.

Patent No. 4,088,565, Leonard R. Watts, Norman L. Brewer, SOLVENT DEWAXING PROCESS, Interference No. 101,004, decided May 25, 1984, Claims 1 and 2.

Patent No. 4,099,860, John C. Connin, COPIER/DUPLICATOR PRIORITY INTERRUPT APPARATUS, Interference No. 100,574, decided Mar. 26, 1984, Claim 1.

Patent No. 4,162,278, Albrecht H. Granzow, FLAME RETARDANT POLYPHENYLENE ETHER RESIN COMPOSITIONS CONTAINING A PENTAERYTHRITYL PHOSPHANATE, Interference No. 101,042, decided June 26, 1984, Claims 1-5 and 9.

Patent No. 4,187,638, James H. Hardy, James E. Roberson, METHOD AND APPARATUS FOR APPLYING CHEMICALS TO WEEDS AND PLANTS, Interference No. 100,591, decided Mar. 26, 1984, Claims 1, 6-8, 10-15 and 18-25.

Patent No. 4,192,014, Donald C. Craycraft, ROM MEMORY CELL WITH 2^n FET CHANNEL WIDTHS, Interference No. 101,026, decided July 27, 1984, CLAIMS 1, 3, 5, 6, 7 and 8.

Patent No. 4,244,951, Eric C. Bigham, BIS-ESTERS OF METHANEDIOL WITH PENICILLINS AND PENICILLANIC ACID 1, 1-DIOXIDE, Interference No. 100,894, decided Mar. 26, 1984, Claims 5 and 10.

Patent No. 4,252,338, William E. Ingalls, Frank S. Bigelow, APPARATUS METHOD FOR CORRECTING CAMBER OR CASTER, Interference No. 100,781, decided June 27, 1984, Claims 1, 5, 8 and 11.

Patent No. 4,254,282, Kiyoshi Kondo, Toshiyuki Takashima, Daiei Tunemoto, PROCESS FOR PREPARING CIS-3-(2,2-DIHALOVINYL)-2,2-DIMETHYLCYCLOPROPANECARBOXYLIC ACID, Interference No. 100,882, decided May 11, 1984, Claims 1-3.

Patent No. 4,362,574, Ara Gevondyan, INTEGRATED CIRCUIT AND MANUFACTURING METHOD, Interference No. 101,189, decided Sept. 27, 1984, Claim 1.

Patent No. 4,376,088, Richard A. Prather, PROCESS FOR PREPARING A PARTICLE BOARD USING A SELF-RELEASING BINDER COMPRISING A POLYISOCYANATE AND A SULFUR-CONTAINING RELEASE AGENT, Interference No. 101,143, decided July 26, 1984, Claims 1, 4, 6, 7, 10 and 12.

NANNIE B. HENRY,
Deputy Clerk,
Board of Patent Interferences.

PATENT NOTICES

Certificates of Correction for the Week of Nov. 20, 1984

4,175,436	4,417,661	4,438,959	4,451,663
4,183,626	4,417,750	4,439,609	4,451,745
4,232,838	4,417,998	4,439,841	4,451,896
4,261,635	4,419,481	4,440,614	4,452,240
4,294,831	4,419,893	4,440,881	4,452,809
4,307,998	4,420,223	4,441,567	4,452,886
4,322,135	4,420,417	4,441,945	4,453,359
4,335,516	4,420,677	4,442,037	4,454,106
4,367,072	4,422,026	4,442,113	4,454,444
4,373,696	4,423,701	4,442,799	4,454,692
4,378,905	4,427,446	4,442,910	4,455,566
4,379,457	4,429,228	4,443,850	4,455,828
4,387,745	4,429,971	4,443,894	4,457,092
4,388,809	4,430,341	4,444,682	4,457,132
4,389,093	4,431,237	4,444,889	4,457,138
4,394,601	4,431,632	4,445,330	4,457,771
4,396,520	4,432,509	4,445,929	4,457,854
4,401,708	4,432,904	4,446,527	4,457,882
4,402,841	4,434,531	4,446,842	4,458,076
4,404,000	4,436,619	4,447,236	4,458,192
4,408,129	4,436,787	4,447,516	4,458,258
4,410,992	4,436,925	4,448,814	4,458,720
4,411,725	4,437,031	4,449,640	4,459,588
4,415,503	4,437,616	4,450,163	4,461,953
4,416,342	4,438,130	4,451,280	
4,416,460	4,438,914	4,451,634	

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

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	Columbus: Ohio State University Libraries	(614) 422-6286
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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF September 1, 1984

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	6-25-82
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	9-29-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	12-09-82
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	6-19-80
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—B. R. GRAY, Director	6-18-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	2-23-84
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	12-14-81
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	10-13-82
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	5-09-80
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	7-06-81
DESIGN, GROUP 290—K. L. CAGE, Director	2-22-82
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—(Vacant)	3-12-82
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	5-18-82
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	6-08-82
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	11-30-81
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	6-04-82

Expiration of patents: The patents within the range of numbers indicated below expire during September 1984, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,339,206 to 3,344,432, inclusive

Plant Patents ..... Numbers 2,764 to 2,769 inclusive

REEXAMINATIONS

NOVEMBER 20, 1984

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 Des. 243,652 (272nd)
CORDLESS ELECTRIC TOOL

Donald W. Zurwelle, Lutherville; Lee W. Ramstrom, Kingsville, and Stanley A. Markle, Lutherville, all of Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.

Reexamination Request No. 90/000,519, Mar. 2, 1984.
Reexamination Certificate for Patent No. Des. 243,652, issued Mar. 15, 1977, Ser. No. 600,262, Jul. 31, 1975.
U.S. Cl. D8—68

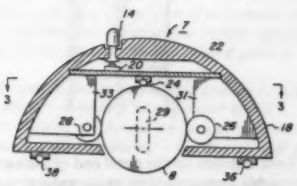
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of the claim is confirmed.

B1 3,835,464 (273rd)
POSITION INDICATOR FOR A DISPLAY SYSTEM

Ronald E. Rider, Menlo Park, Calif., assignor to Xerox Corporation, Stamford, Conn.

Reexamination Request No. 90/000,415, Jul. 5, 1983.
Reexamination Certificate for Patent No. 3,835,464, issued Sep. 10, 1974, Ser. No. 322,810, Jan. 11, 1973.
Int. Cl.[3] G06F *3/14*
U.S. Cl. 340—710



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–13** are cancelled.

Claim **14** is determined to be patentable as amended.

New claims **15–17** are added and determined to be patentable.

14. *Position indicator apparatus for a display system controlled by a computer whereby the display is alterable in accordance with signals delivered to said computer which indicate positions on said display and changes desired to be made therein, said apparatus being movable over a surface to provide position indications corresponding to positions on said display, comprising:*

a housing,

means for supporting said housing on said surface and transporting said housing over said surface, said means comprising spherical means in contact with said surface,

said spherical means further comprising means for translating the movement of said housing into radial information, and

transducer means responsive to said spherical means for delivering signals to said computer for indicating the movement and position of said housing,

said spherical supporting means is constrained in the vertical coordinate within said housing in a direction away from said surface at a point of tangency with its outer surface,

said supporting means further comprises at least two supporting elements attached to said housing, which elements in combination with said spherical supporting means comprises at least a tripodal supporting means for said indicator, [The position indicator apparatus of claim **13** wherein] said spherical supporting means [is] *being* unconstrained in the opposite direction of said vertical coordinate within said housing such that said spherical means remains in contact with said surface even if said surface has irregularities.

B1 4,019,057 (274th)
DEVICE FOR DETERMINING THE SPATIAL DISTRIBUTION OF RADIOACTIVITY WITHIN AN OBJECT

Stanley Bram, Paris, France, assignor to Institut Pasteur, France

Reexamination Request No. 90/000,419, Jul. 14, 1983.
Reexamination Certificate for Patent No. 4,019,057, issued Apr. 19, 1977, Ser. No. 553,109, Feb. 26, 1975.
Claims priority, application France, Apr. 25, 1974, 74.14453
Int. Cl.[3] G01T *1/18*
U.S. Cl. 250—375

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–14** is confirmed.

1. A method for determination of the spatial distribution of radioactivity in an object, comprising the steps of

a. placing said object inside the chamber of a position-sensitive radioactivity detector;

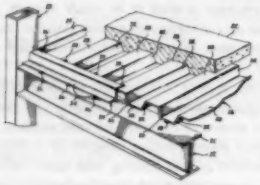
b. sealing said chamber;

c. introducing a gas into said chamber under pressure significantly higher than atmospheric pressure;

d. sensing the location within said chamber of a particle emitted by said object; and

e. counting and displaying the number of such particles sensed at a plurality of locations within said detector.

B1 4,186,535 (275th)
SHEAR LOAD RESISTANT STRUCTURE
Virgil R. Morton, Redondo Beach, Calif., assignor to Vereo Manufacturing, Inc., Phoenix, Ariz.
Reexamination Request No. 90/000,166, Feb. 25, 1982.
Reexamination Certificate for Patent No. 4,186,535, issued Feb. 5, 1980, Ser. No. 936,176, Aug. 23, 1978.
Continuation-in-part of Ser. No. 805,523, Jun. 10, 1977, abandoned.
Int. Cl.[3] E04C *2/32*
U.S. Cl. 52—250



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1, 2, 5, 7–10** and **12** are determined to be patentable as amended.

Claims **3, 4, 6, 11** and **13**, dependent on an amended claim, are determined to be patentable.

1. A diaphragm for translating horizontal shear loads imposed thereon through a supporting load bearing member to vertical load resisting members in buildings, said diaphragm comprising in combination:

[a. a fluted deck, said fluted deck including webs alternately interconnecting top and bottom flutes terminating at opposed open ends defined by the extremities of said webs, said top flutes and said bottom flutes, said fluted deck having the opposed open ends supported by a load bearing member;**]**

(a) at least one integral seamless fluted deck panel including:

i. a plurality of top flutes disposed in an upper horizontal plane and a plurality of bottom flutes disposed in a lower horizontal plane, each of said plurality of top flutes and each of said plurality of bottom flutes having side edges extending parallel to the longitudinal axis of said fluted deck panel;

ii. a plurality of webs each extending upwardly from a side edge of a bottom flute to a side edge of a top flute, said plurality of webs alternately interconnecting said plurality of top flutes with said plurality of bottom flutes;

iii. each of said plurality of bottom flutes being connected to a first and a second of said plurality of webs at opposing side edges of said bottom flute, said first and second webs each extending upwardly at an angle to the vertical and extending in opposing horizontal directions to one another; and

iv. said plurality of top flutes and said plurality of bottom flutes terminating at opposed open ends defined by the extremities of said webs, said top flutes and said bottom flutes, said fluted deck panel having the opposed open ends supported by a load bearing member;

(b) first welds for rigidly securing the ends of each of said bottom flutes of said fluted deck *panel* to the supporting load bearing member;

(c) *a* load translation **[**means**]** *member* transversely located with respect to the flutes of said fluted deck *panel* for structurally interconnecting the top flutes of said deck *panel* with one another and with the load bearing member, *said load translation member having an upper flange for engaging said plurality of top flutes and a lower flange parallel to said upper flange and interconnected thereto for engaging said load bearing member;*

(d) second welds for rigidly securing the ends of each of said top flutes of said deck *panel* directly to *said upper flange of* said load translation **[**means**]** *member;* and

(e) third welds for rigidly securing the load bearing member directly to *said lower flange of* said load translation **[**means**]** *member;*

whereby, said load translation **[**means**]** *member* inhibits relative movement between and buckling of said top and bottom flutes of said fluted deck *panel* due to horizontal shear loads imposed upon said diaphragm and said load translation **[**means**]** *member* translates the horizontal shear loads from said diaphragm to the load bearing member and ultimately to the vertical load resisting members.

B1 4,338,751 (276th)
KNOCKDOWN SPIRAL STAIRWAY
Forest E. Sanders, 210 Pershing St., Green City, Mo. 63545
Reexamination Request No. 90/000,394, Jun. 10, 1983.
Reexamination Certificate for Patent No. 4,338,751, issued Jul. 13, 1982, Ser. No. 173,458, Jul. 30, 1980.
Int. Cl.[3] E04F *11/00*
U.S. Cl. 52—187

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–4** are cancelled.

1. A spiral stairway construction, comprising:

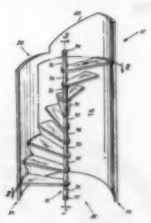
an arcuate wall having a top end, a bottom end and defining first and second spaced wall edges each having an upper and lower end,

said wall being vertically disposed with said bottom end adapted to rest on a supporting surface,

said wall being provided with a plurality of slots that are vertically spaced and angularly offset from a predetermined point near the lower end of said first wall edge to a predetermined point near the upper end of said second wall edge to define a helical path,

a plurality of individual steps each having a proximal end from which respective sides diverge to a distal end forming a tread surface of usual spiral stairstep design,

the proximal end of each step provided with a mounting



hole, a hook member on the distal end of each step affording removable engagement of each respective distal end with said wall through a respective slot,

with said distal ends engaged in a respective wall slot the proximal end of each step extending to a point intermediate said first and second wall edges with said mounting holes disposed in vertically aligned registration,

a post support means removably journalled through said aligned holes to engage the supporting surface whereby the assembled stairway is free standing with said steps effectively locked in position to said wall and cannot be displaced without removal of said post support means, and

means on said post support means for effectively spacing adjacent steps.**]**

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,737

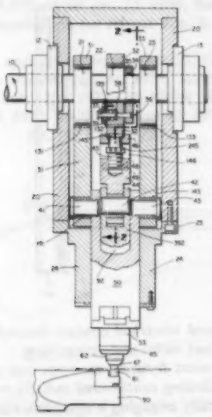
ADJUSTABLE DIE AND PUNCH FOR SHEET MATERIAL FASTENING MACHINES

Otto P. Hafner, 1321 Paddock Way, Cherry Hill, N.J. 08034

Original No. 3,862,485, dated Jan. 28, 1975, Ser. No. 384,494, Aug. 1, 1973. Continuation-in-part of Ser. No. 275,946, Jul. 28, 1972, abandoned. Application for reissue Aug. 26, 1976, Ser. No. 718,078

Int. Cl.³ B23P *19/00*

U.S. Cl. 29—432.2 14 Claims



13. Spot clinch tool for forming a spot clinch joint by lancing and swaging two or more materials together using one complete stroke of a power source in a single station, said power source having a power stroke and a retract stroke, said tool utilizing an anvil, die and punch

means for moving one of said punch and anvil while maintaining the other stationary during said complete stroke of said power source,

means for moving one of said punch and anvil toward the other during a first part of said power stroke,

means for piercing said materials with said punch and die to lance them during a second part of said power stroke,

means for holding the die in a first position spaced from the anvil during both said first and second parts of said power stroke,

means for moving the die to a second position in respect to said anvil during a third part of said power stroke,

means for swaging the lanced portions of said materials with said punch and anvil during a fourth and final part of said power stroke,

means for maintaining the die and the anvil in said second position during said fourth and final part of said power stroke and during a first part of said retract stroke, and

means for moving said die relative to said anvil from said second position to said first position during a second and final part of said retract stroke.

14. Spot clinch method for forming a spot clinch joint by lancing and swaging two or more materials together using one complete stroke of a power source in a single station, said power source having a power stroke and a retract stroke, said method utilizing an anvil, die and punch, said method comprising

moving one of said punch and anvil while maintaining the other stationary during said complete stroke of said power source,

moving said one of said punch and anvil toward the other during a first part of said power stroke,

lancing said materials by piercing them with said punch and die during a second part of said power stroke,

holding the die in a first position spaced from the anvil during both said first and second parts of said power stroke,

moving the die to a second position in respect to said anvil during a third part of said power stroke,

swaging the lanced portion of said materials during a fourth and final part of said power stroke,

maintaining the die and the anvil in said second position during said fourth and final part of said power stroke and during a first part of said retract stroke,

and moving said die relative to said anvil from said second position to said first position during a second and final part of said retract stroke.

Re. 31,738

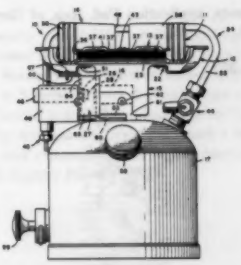
PORTABLE SINGLE BURNER CAMPSTOVE

Thomas C. Hastings, Willowdale, Canada, assignor to The Coleman Company, Inc., Wichita, Kans.

Original No. 4,126,117, dated Nov. 21, 1978, Ser. No. 786,292, Apr. 11, 1977. Application for reissue Jul. 20, 1979, Ser. No. 59,437

Int. Cl.³ F23D *13/04*

U.S. Cl. 126—44 1 Claim



1. A portable single burner campstove comprising a fuel tank, a burner assembly mounted above the fuel tank, a generator assembly communicating with the fuel tank and extending adjacent the burner assembly for vaporizing fuel, the generator assembly including a generator tip, a mounting member secured to the top of the fuel tank, a burner box supported by the mounting member, the burner box having a bottom wall and a perimetric side wall which provide an internal chamber, the burner assembly being mounted on the top of the burner box in communication with the internal chamber, a venturi tube extending through the side wall of the burner box into the internal chamber therein, the venturi tube being spaced upwardly from the bottom wall of the burner box, the generator tip being spaced outwardly from the venturi tube whereby fuel flowing through the generator tip mixes with air as the fuel enters the venturi tube, the air and fuel being mixed in said internal chamber and being distributed by the internal chamber to the burner assembly, *said mounting member including a horizontal base plate secured to the fuel tank and a pair of spaced-apart support members extending vertically upwardly from the base plate, the burner box being positioned between the support members, each of the support members having an inwardly extending boss for contacting the side wall of the burner box, and a*

screw extending through each of the bosses for securing the burner box to the support members.

Re. 31,739

LIGHTLY PRIZED TOBACCO

James A. Broughton, Prospect, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Original No. 3,693,629, dated Sep. 26, 1972, Ser. No. 148,967, Jun. 1, 1971. Application for reissue Jun. 11, 1981, Ser. No. 272,615

Int. Cl.³ A24B *13/00*

U.S. Cl. 131—111 **6 Claims**

1. A chewing tobacco product comprising a block of tobacco having a non-cylindrical configuration and having a tensile strength of [less than] *from about 1.0 to* 10.0 lbs. per sq. in. and an initial compression of from 2.0 to 25 lbs. per sq. in. and a final compression of from [0.5] *about 1.2* to 20 lbs. per sq. in.

Re. 31,740

Patent Not Issued For This Number

Re. 31,741

INERTIALLY LOCKED HINGE FOR MOTOR VEHICLE SEAT

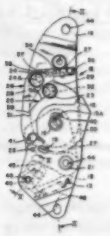
Willibald Strowick, Remscheid-Lennep, and Paul Werner, Remscheid, both of Fed. Rep. of Germany, assignors to Keiper U.S.A., Inc., Battle Creek, Mich.

Original No. 4,165,128, dated Aug. 21, 1979, Ser. No. 833,336, Sep. 14, 1977. Application for reissue Jul. 30, 1980, Ser. No. 173,803

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1976, 2641587

Int. Cl.³ A47C *1/025*

U.S. Cl. 297—367 **20 Claims**



11. In a motor-vehicle seat having a seat part and a reclining back part adjustable in any of a plurality of angular positions relative to said seat part, a hinge comprising:

a lower hinge element fixed to said seat part;

an upper hinge element fixed to said back part;

means for pivotably connecting said upper hinge element to said lower hinge element;

a positioning element pivotal on said lower hinge element and formed with a stop formation and an abutment engaging said upper hinge element in a rest position thereof;

an inertial pawl in the form of a two-arm lever pivotal on said upper hinge between a blocking position and a freeing position, one arm of said lever being directed toward said stop formation on said positioning element and having a stop face engageable with said formation when said pawl is in said blocking position, the other arm of said lever being weighted so as normally to pivot by gravity in one rotational sense into said freeing position; said positioning element having a support surface adapted for engaging said other arm against the force of gravity to urge said pawl into said blocking position and for releasing said other arm into said freeing position only upon a slow forward pivoting of said back part; and

means for locking said positioning means in any of a plurality of angularly offset positions for adjusting said rest position.

Re. 31,742

UNITARY HOODED ELECTRICAL CONTACT

Tedford H. Spaulding, Norridge, Ill., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Original No. 4,136,923, dated Jan. 30, 1979, Ser. No. 842,185, Oct. 14, 1977. Application for reissue Mar. 28, 1983, Ser. No. 479,594

Int. Cl.³ H01R *13/12*

U.S. Cl. 339—258 R **16 Claims**

1. An elongated electrical contact formed of a single, integral piece of sheet metal and comprising:

an active element forming an open end at one end of the contact including *cantilevered* radially resilient tine means for electrically engaging a complimentary pin contact;

an integral terminal element forming an open end at the other end of the contact including means for mechanically and electrically engaging an electrical conductor; and

an open ended hood means *extending* coaxially about *and continuously around* said active contact element for housing and protecting said active contact element, said hood means including a relatively smooth outer surface free of cutting edges *with substantially all points on the outer surface of said active contact element being contiguous with the inner surface of said hood means.*

Re. 31,743

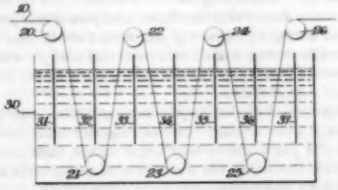
AC ETCHING OF ALUMINUM CAPACITOR FOIL

Mulk R. Arora, and John J. Randall, Jr., both of Williamstown, Mass., assignors to Sprague Electric Company, North Adams, Mass.

Original No. 4,279,714, dated Jul. 21, 1981, Ser. No. 187,241, Sep. 15, 1980. Application for reissue Aug. 19, 1981, Ser. No. 294,251

Int. Cl.³ C25F *3/04, 3/14*

U.S. Cl. 204—129.9 **7 Claims**



5. In a method for producing electrodes for use in an aluminum electrolytic capacitor whose effective surface area is enlarged

by electrochemically etching aluminum foil in an aqueous solution consisting essentially of hydrogen chloride and an additive capable of anodizing said aluminum foil with electric power supplied in alternating current, an improvement characterized in that the concentration of the hydrogen chloride in said solution is set at a range between 0.7N and 2N, the concentration of said additive is set at a range between 0.02 mole/liter and 0.4 mole/liter, the frequency of said alternating current power supply is ranging from 20 Hz to 40 Hz and its current density is ranging from 1.6 A/in² to 4 A/in², while the temperature of said solution is being maintained at 30° to 45° C.

Re. 31,744

EXPANDED OLEFIN POLYMER

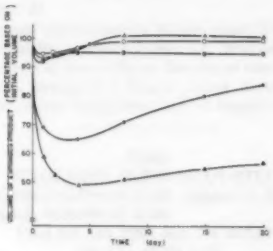
Seizaburo Watanabe, and Yutaka Matsuki, both of Suzuka, Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Original No. 4,214,054, dated Jul. 22, 1980, Ser. No. 952,865, Oct. 19, 1978. Application for reissue Jun. 8, 1981, Ser. No. 271,067

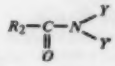
Claims priority, application Japan, Oct. 21, 1977, 52-125839; Dec. 23, 1977, 52-155401; Dec. 24, 1977, 52-156201; Feb. 20, 1978, 53-17698; Feb. 20, 1978, 53-17699; Feb. 20, 1978, 53-17700; Mar. 28, 1978, 53-35709; May 12, 1978, 53-55545

Int. Cl.³ C08J 9/14

U.S. Cl. 521—95 **6 Claims**

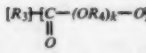


7. An expanded article of an olefin polymer composition comprising an olefin polymer and at least one compound, which reduces shrinkage of said expanded article after expansion, selected from the group consisting of the amide or complete ester compounds represented by the formula (II) or (III), respectively, as set forth below in an amount of 0.1 to 10 percent by weight based on the weight of said olefin polymer and having a closed cellular characteristic value of 0 to 0.5 g/cm³, a bulk density of 10 to 200 kg/m³ and a compressive strength coefficient of 2.15×10^{-3} to 2.89×10^{-2};



(II)

wherein R_2 is an alkyl group having 9 to 23 carbon atoms, Y and Y' each is a hydrogen atom, an alkyl having 1 to 24 carbon atoms, an acyl having 10 to 24 carbon atoms or a substituent of the formula $-(R_4O)_mA_2$ wherein R_4 is an alkylene group having 1 to 3 carbon atoms, m is an integer of 1 to 10, and A_2 is hydrogen atom, an alkyl having 1 to 24 carbon atoms or acyl having 10 to 24 carbon atoms;



(III)

wherein $[R_3]$ means plural alkyl or hydroxyalkyl groups corresponding in number to the integer l, which may be the same or different, each having 9 to 23 carbon atoms, R_4 is an alkylene group having 1 to 3 carbon atoms, k is an integer of 0 to 7, l is an integer of 2 to 8 and Z is an l-valent residue of an l-valent polyhydric alcohol of the formula $Z(OH)_l$ from which l hydroxyl groups are eliminated; said expanded article having been prepared by the use of a volatile organic blowing agent.

PLANT PATENTS

GRANTED NOVEMBER 20, 1984

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,340

ROSE PLANT JACTU

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Mar. 14, 1983, Ser. No. 475,162
Int. Cl. A01H *5/00*
U.S. Cl. Plt.—11 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its floriferous, upright plant, blend of flower color from white to red upon exposure to sunlight, large double flowers of little or no fragrance.

5,341

ROSE PLANT JACAL

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Mar. 14, 1983, Ser. No. 475,163
Int. Cl. A01H *5/00*
U.S. Cl. Plt.—20 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its upright bush, orange-red flowers aging darker, numerous thorns, reddish new foliage and lack of fragrance.

5,342

PLUM TREE, SUPLUMFOURTEEN

John H. Weinberger, Fresno, Calif., assignor to Superior Farming Company, Bakersfield, Calif.

Filed Feb. 10, 1983, Ser. No. 465,675
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—38 **1 Claim**

1. A new and distinct variety of plum tree, as described and illustrated, bearing clingstone fruit which ripens at approximately the same time as the Santa Rosa (unpatented) variety of plum tree to which it is most nearly similar, the fruit of the new variety being characterized as to novelty in relation to the fruit of the Santa Rosa variety in being larger, in having a more purplish and less reddish skin coloration, in having a form which is more narrowly ovoid rather than globose, in which the base is broader and flatter than rounded, in which the shoulders are slanted more toward the apex, in which the apex is a short rounded point rather than being depressed, in having a relatively longer ripening period, in having superior shipping and keeping qualities, and in having flesh which is substantially less acid and which attains a fully reddish coloration when relatively immature.

5,343

PLUM TREE, SUPLUMTHIRTEEN

John H. Weinberger, Fresno, Calif., assignor to Superior Farming Company, Bakersfield, Calif.

Filed Feb. 10, 1983, Ser. No. 465,676
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—38 **1 Claim**

1. A new and distinct variety of plum tree as described and illustrated, characterized by bearing clingstone fruit of relatively consistently large size and uniformly symmetrical shape and characterized as to novelty by bearing fruit which ripens about one week later than fruit of the Santa Rosa variety of plum tree (unpatented) and about one week before fruit of the El Dorado variety of plum tree (unpatented) and being further characterized as to novelty by bearing fruit during such period which has skin of a uniformly substantially black coloration, and which has flesh of a uniformly substantially cream coloration.

5,344

PEACH TREE

Aldo Spada, and Emidio Palombi, both of Tarquinia, Italy, assignors to Superior Farming Company, Bakerside, Calif.

Filed Feb. 24, 1983, Ser. No. 469,566
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—43 **1 Claim**

1. A new and distinct variety of peach tree as a sport of the peach tree cv. Springcrest (unpatented) characterized in that it ripens 13 to 16 days earlier than the Springcrest peach and shows a more pronounced suture than that of the Springcrest peach.

5,345

REDWOOD TREE

William J. Libby, Orinda, Calif., and Kwabena Tufuor, Kumasi, Ghana, assignors to The Regents of the University of California, Berkeley, Calif.

Filed Mar. 31, 1983, Ser. No. 481,101
Int. Cl.[3] A01H *7/00*
U.S. Cl. Plt.—50 **1 Claim**

1. The new and distinct variety of redwood (*Sequoia sempervirens*), useful for Christmas tree and ornamental purposes, as herein described, characterized particularly by a dense columnar form, sometimes with upturning lower branches, slow growth, blue green winter color with buff or yellowish winter meristems, unusual cones, and ease of vegetative propagation.

5,346

DISTINCT CLONE OF THE SPECIES *TRACHELOSPERMUM ASIATICUM* CHARACTERIZED AS NOVEL BY ITS DWARF SIZE

Hugh J. Billeaud, III, P.O. Box 284, New Iberia, La. 70560

Filed Feb. 28, 1983, Ser. No. 470,313
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—54 **1 Claim**

1. A new and distinct variety of *Trachelosperum asiaticum* plant substantially as illustrated in FIG. I and described in the Specification, characterized by a dwarf growth habit.

5,347

KALANCHOE PLANT

Heinz Sommer, Zschwil, Switzerland, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Nov. 5, 1982, Ser. No. 439,645
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of Kalanchoe plant known by the cultivar name Mercur, as described and illustrated, and particularly characterized by its deep orange flower color, highly floriferous habit, sturdy, upright self-branching plant form; above average keeping qualities; relatively dark green foliage with crenated margins, and by its adaptability to 10–15 cm. pot production on a year round basis in controlled environments.

5,348
KALANCHOE PLANT NAMED BALI
Hermann Finger, Wiesmoor, Fed. Rep. of Germany, assignor to Wiesmoor-Gartnerei und Baumschule GmbH, Wiesmoor, Fed. Rep. of Germany
Filed Mar. 23, 1983, Ser. No. 477,894
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct Kalanchoe plant named Bali, as described and illustrated, and particularly charcterized by its vigorous growth habit and root system, highly floriferous habit, with orange colored flowers being formed at every shoot, freely branching, and by its suitability for production in 8 to 15 cm. pots.

5,349
DISTINCT VARIETY OF STREPTOCARPUS NAMED ADONIS
Herbert Kaiser, Rieskirchen, Fed. Rep. of Germany, assignor to Oglevee Associates, Inc., Connellsville, Pa.
Filed May 13, 1983, Ser. No. 494,408
Int. Cl. A01H 5/00
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct variety of Streptocarpus substantially as herein shown and described.

5,350
CHRYSANTHEMUM PLANT NAMED TRUE LUV
William E. Duffett, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio
Filed Mar. 9, 1983, Ser. No. 473,565
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—76 1 Claim

1. A new and distinct cultivar of *Chrysanthemum morifolium*, Ramat., named True Luv, as described and illustrated, and particularly charcterized as to uniqueness by the combined characteristics of flat capitulum form; decorative capitulum type; deep lavender ray floret color; diameter across face of capitulum ranging from 105 to 115 mm. at maturity; uniform eight week photoperiodic flowering response; short plant height and semi-spreading branching pattern.

5,351
CHRYSANTHEMUM PLANT NAMED SURFINE
William E. Duffett, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio
Filed Feb. 18, 1983, Ser. No. 467,859
Int. Cl. A01H 5/00
U.S. Cl. Plt.—78 1 Claim

1. A new and distinct cultivar of *Chrysanthemum morifolium*, Ramat., named Surfine, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; decorative capitulum type; light yellow ray floret color; diameter across face of capitulum ranging from 70 to 85 mm. at maturity; uniform eight week flowering photoperiodic response; short plant height, and semi-spreading branching pattern.

5,352
CHRYSANTHEMUM PLANT NAMED TEMPTER
William E. Duffett, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio
Filed Feb. 18, 1983, Ser. No. 467,862
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—78 1 Claim

1. A new and distinct cultivar of *Chrysanthemum morifolium*, Ramat., named Tempter, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; decorative capitulum type; medium yellow ray floret color; diameter across face of capitulum ranging from 90 to 120 mm. at maturity; uniform nine week flowering response; tall plant height, and semi-spreading branching pattern.

5,353
CHRYSANTHEMUM PLANT NAMED VISTA
William E. Duffett, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio
Filed Mar. 7, 1983, Ser. No. 472,645
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—78 1 Claim

1. A new and distinct cultivar of *Chrysanthemum morifolium*, Ramat., plant known by the cultivar name Vista, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of semi-incurved to flat capitulum form; anemone capitulum type; light bronze to golden yellow ray floret color; diameter across face of capitulum ranging from 35 to 50 mm. at maturity; uniform seven weeks flowering response; short plant height, and spreading branching pattern.

5,354
CHRYSANTHEMUM PLANT NAMED TABASCO
William E. Duffett, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio
Filed Feb. 18, 1983, Ser. No. 467,860
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—82 1 Claim

1. A new and distinct cultivar of *Chrysanthemum morifolium*, Ramat., named Tabasco, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; decorative capitulum type; orange red ray floret color; diameter across face of capitulum ranging from 100 to 120 mm. at maturity; uniform nine week flowering response; tall plant height, and semi-spreading branching pattern.

5,355
PHILODENDRON PLANT
Cora McColley, P.O. Box 17126, Orlando, Fla. 32810
Filed Feb. 17, 1983, Ser. No. 467,439
Int. Cl.³ A01H 5/12
U.S. Cl. Plt.—88 1 Claim

1. A new and distinct variety of Philodendron plant, substantially as herein disclosed, characterized as to novelty by compact plant form, broad, thick, leathery leaves having depressed veination, brick red leaf color when immature, black red color when fully mature, ability to withstand low light intensity and low soil moisture content for long periods of time.

PATENTS

GRANTED NOV. 20, 1984

ERRATA

For CLASS	See PATENT NO.
331–021	4,483,075
446–430	4,483,096
446–207	4,483,097
109–001	4,483,273
523–203	4,483,784
534–756	4,483,795
534–604	4,483,796
358–340	4,484,174
360–132	4,484,248

PATENTS

GRANTED NOVEMBER 20, 1984

GENERAL AND MECHANICAL

4,483,019

DRY DIVING SUIT WITH WRAPAROUND DOUBLE KNEE PORTION AND METHOD OF MAKING THE SAME

Bruce D. Spangrud, Scappoose; Paul H. Gunderson, and Ann K. Whinston, both of Portland, all of Oreg., assignors to Off-Shore Diving Equipment, Scappoose, Oreg.

Filed Nov. 21, 1983, Ser. No. 553,776

Int. Cl.³ B63C *11/04;* **A41D** *13/06, 27/24;* **A41B** *3/06*

U.S. Cl. 2—2.1 R **15 Claims**

1. In an underwater diving suit made of waterproof material, a leg portion comprising a first piece of waterproof material; and

a unitary protective piece of material disposed exteriorly of the first piece and coextensive laterally therewith, the protective piece extending completely the leg portion, the first piece and the protective piece being united longitudinally only at the inseam,

whereby the first piece and the protective piece form a circumferentially extending two-layer leg portion having a single longitudinal seam.

4,483,020

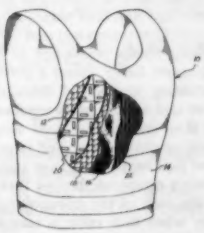
PROJECTILE PROOF VEST

Anthony G. Dunn, Sturgis, Mich., assignor to Jack P. Cittadine, Elkhart, Ind., a part interest

Filed Nov. 17, 1982, Ser. No. 442,304

Int. Cl.³ F41H *1/02*

U.S. Cl. 2—2.5 **8 Claims**



1. A vest having projectile-stopping capabilities comprising inner and outer material cover layers for positioning about a body part of the user, a layer of ballistic material fitted between said layers, said ballistic material being flexible and having projectile-entrapping capabilities upon projectile impact, and including a layer of shock-resistant plate means located adjacent said ballistic material and forming a generally rigid surface when struck by a projectile, said plate means for spreading out and distributing the blunt trauma force of said projectile over a wide area of said vest, the improvement wherein said plate means includes a plurality of juxtaposed plate parts fitted edge to edge, each plate part including an outwardly projecting tab and having a marginal recess opening, said tab of each plate part fitted restrictively into said marginal opening of an adjacent plate part and overlying a portion of said adjacent plate part so as to constitute means for providing a one directional non-flexing interlock with such adjacent plate part to define said rigid surface.

4,483,021

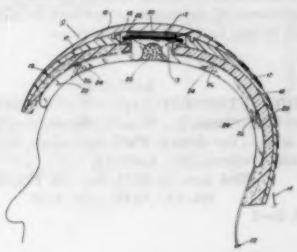
THERMO-ELECTRIC COOLED HEAD GEAR

Jerry C. McCall, Gulfport, Miss., assignor to Mckool, Inc., Gulfport, Miss.

Filed Aug. 5, 1982, Ser. No. 405,636

Int. Cl.³ A42B *3/00*

U.S. Cl. 2—7 **8 Claims**



1. Thermo-electric cooled headgear comprising:

(a) a hard shell having a cavity defined in and through said hard shell;

(b) thermo-electric heat pump means mounted in said cavity;

(c) thermal radiation means closing said cavity and extending along a portion of the exterior of said shell, said thermal radiation means being connected to said heat pump means whereby heat is transferred by said heat pump means through said cavity and from said heat pump means for heat radiation from said radiation means;

(d) insulated electrical conduction means operationally connected to said heat pump means and connectable to an electrical power source for energizing said heat pump to electrically pump heat to said radiation means, and;

(e) liquid heat transfer means mounted in said headgear for transfering heat between a wearer's head and said heat pump, said liquid heat transfer means comprising bladder means conformable in shape to the contour of a wearer's head, said bladder means being fillable with a heat transfer liquid whereby heat transfer liquid convection currents transfer heat from the wearer's head, around said contour, and to said heat pump means.

4,483,022

BASEBALL GLOVE

Katsumi Aoki, Ikeda, Japan, assignor to Mizuno Corporation, Osaka, Japan

Filed Jun. 14, 1982, Ser. No. 388,189

Int. Cl.³ A41D *13/10*

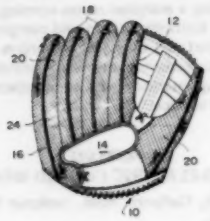
U.S. Cl. 2—19 **2 Claims**

1. An improved baseball glove, said glove comprising:

a padded palm body including

a face and an inside leather member and a back leather

member, said back leather member with said inside leather member define finger sheaths wherein the improvement comprising at least a portion of the back leather member is stiffened by impressing said back leather member into a simulated woven meshwork pattern including an overlapping series of band areas, wherein the impressing serves to stretch the band areas and a number of mesh-like apertures are formed in the spaces defined between the overlapping band areas of the meshwork pattern in said stiffened portion of said back leather member.

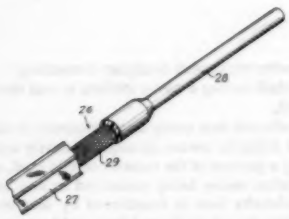


4,483,023

HIGH-STRENGTH LIGAMENT PROSTHESIS

Harmon L. Hoffman, Jr., Wycoff; Steven Weinberg, Oakland, both of N.J., and John P. Park, Springdale, Ark., assignors to Meadox Medicals, Inc., Oakland, N.J.

Filed Aug. 21, 1981, Ser. No. 295,160
Int. Cl.³ A61F *1/04, 5/04*
U.S. Cl. 3—1 **13 Claims**



1. A high-strength ligament prosthesis comprising an elongated polyethylene terephthalate fabric shell of reduced extensibility in the longitudinal direction and a central reinforcing core disposed within said outer shell, said fabric shell having a sufficiently open construction to permit ingrowth of body tissue to anchor the shell after implantation, and at least one end of the outer shell and reinforcing core having a deformable substantially rigid end tip secured thereon for coupling the outer shell and the end of said reinforcing core together to prevent displacement of the reinforcing core within the outer shell and for assisting in positioning the prosthesis during surgery.

4,483,024

VARIABLE FLUSH WATER CLOSET

Frederick R. Troeh, 4117 Quebec St., Ames, Iowa 50010

Filed Aug. 27, 1982, Ser. No. 412,124
Int. Cl.³ E03D *1/14, 3/12*
U.S. Cl. 4—324 **2 Claims**

1. A variable flush water closet comprising,

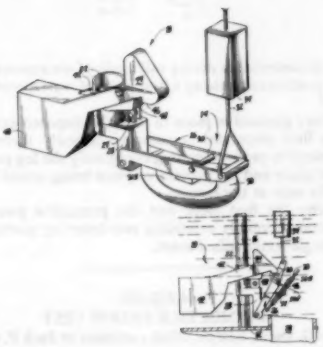
a water tank having a water inlet, and an outlet in the bottom of the tank,

an outlet valve assembly in said tank including a valve positioned at said outlet to move between a raised open and a lowered closed position,

valve actuating means connected to said valve for moving said valve to said raised open position,

first and second float means in said tank vertically spaced apart and operatively connected to said valve to yieldably hold said valve in said raised open position after said valve has been moved to said raised open position by said actuating means, said first float means being higher than said second float means and upon said water falling to a predetermined level said first float is no longer biased upwardly by said water thereupon allowing said valve to move downwardly to close, said first float and said valve actuating means being interconnected at its upper end to an actuating lever and at its lower end including a flexible element connected to said first float and said first float being connected by a rod means to said valve, said float when in its raised open position and when operating independently of said second float is held in said raised position only by the upward bias of the water upon said first float, and

said valve actuating means including means for selectively operatively engaging said valve with said second float positioned lower in said tank than said first float means and upon said water falling to a predetermined second level below said first level said second float moves downwardly operatively being disengaged from said valve allowing said valve to close whereby when said second float means is connected to said valve a larger quantity of water in said tank is discharged through said outlet than when only said first float means is connected to said valve, said second float means and said valve including cooperating locking means positioned to be engaged upon said valve element being raised a predetermined amount by said actuating means and disengaged upon said water falling to said second predetermined level rendering said second float inoperative, said second float including a pivot arm pivotally supported intermediate its ends on an overflow pipe support adjacent said outlet and having said cooperating means on the end thereof opposite said float and in the path of the cooperating means on said valve whereby when said valve is raised a predetermined distance said cooperating means on said second float and said valve are engaged and when said water falls to said second predetermined level said cooperating means on said second float moves upwardly as said second float moves downwardly and said cooperating means on said second float and said valve are disengaged allowing said valve to move to said lowered closed position, said second float being on the opposite end of said pivot arm with said second float and said cooperating means being positioned on opposite sides of said pipe support, said cooperating means being further defined as to said second float means



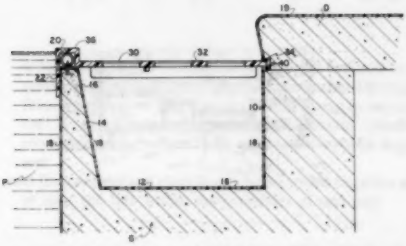
as being a downwardly facing horizontal surface which merges into a vertical shoulder surface and said cooperating means on said valve including a horizontally disposed pin positioned to engage said horizontal surface as said valve is pivoted upwardly and move therealong into locking engagement with said vertical shoulder and upon said second float means pivoting downwardly said vertical shoulder is pivoted upwardly and out of locking engagement with said pin.

4,483,025

SNAP-ON GUTTER COVER FOR SWIMMING POOLS

David L. Meredith, Greensboro, N.C., assignor to Swimout Overflow Components, Inc., Greensboro, N.C.

Filed Aug. 25, 1980, Ser. No. 180,700
Int. Cl.³ E04H *3/16, 3/18*
U.S. Cl. 4—510 **3 Claims**



1. A gutter cover construction for swimming pools of the type having a U-shaped gutter channel extending around the upper edge thereof into which overflow water spills, said gutter channel having a rear wall, a bottom wall, and a front wall separating the water in the pool from the gutter, said front wall terminating in an upper lip at a level beneath the upper extent of said rear wall, said gutter cover construction comprising:

(a) a cover member including a generally planar major portion, a rear edge, and a front portion;

(b) said front portion including an inverted substantially open channel shaped member extending forwardly from said planar portion;

(c) means associated with the lip of said gutter channel for releasably receiving said inverted channel shaped member thereon and preventing horizontal movement thereof;

(d) retaining means in said rear wall for releasably receiving said rear edge of the cover member and preventing vertical movement thereof;

(e) whereby said gutter cover may be assembled, held securely in place, but easily removed.

4,483,026

CRIB

Kenzou Kassai, Higashishimizu, Japan, assignor to Kassai Kabushikikaisha, Osaka, Japan

Filed Jul. 26, 1982, Ser. No. 401,546
Claims priority, application Japan, Oct. 28, 1981, 56-173294; Oct. 28, 1981, 56-173295
Int. Cl.³ A47D *7/00*
U.S. Cl. 5—99 R **11 Claims**

1. A crib comprising:

a front and rear inverted U-shaped frames each including a pair of first and second side rod portions and an upper rod portion; and

means for moving said spaced frames together while simultaneously maintaining said frames parallel to one another, said moving and maintaining means comprising:

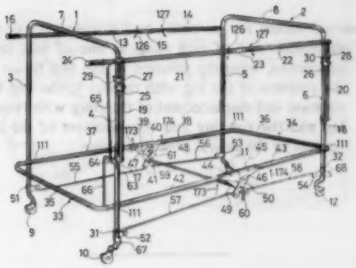
a pair of first and second upper pivot rods having ends pivotably connected to upper end portions of said first side rod portions of said front and rear frames and other ends pivotably connected to each other,

a pair of third and fourth upper pivot rods having ends pivotably connectable to upper end portions of said second side rod portions of said front and rear frames and other ends pivotably connected to each other,

a pair of front and rear U-shaped lower rods each including a pair of first and second side rod portions and a central rod portion extending therebetween, said front and rear lower rods being pivotably connected at portions thereof between said first and second side rod portions and central rod portion thereof to lower end portions of said first and second side rod portions of said front and rear frames,

a pair of first and second brackets fixedly mounted on distal ends of said first side rod portions of said front and rear lower rods and pivotably connected to each other,

a pair of third and fourth brackets fixedly mounted on distal ends of said second side rod portions of said front and rear lower rods and pivotably connected to each other,



first, second, third and fourth connecting bars having ends pivotably connected to said first, second, third and fourth brackets, respectively, said first and second connecting bars being pivotably coupled to each other, and said third and fourth connecting bars being pivotably coupled to each other,

a pair of first and second links pivotably connected between the lower end portions of said first side rod portions of said front and rear frames and said second and first connecting bars, respectively,

a pair of third and fourth links pivotably connected between the lower end portions of said second side rod portions of said front and rear frames and said fourth and third connecting bars, respectively, and

means for locking said first and second upper pivot rods, said third and fourth upper pivot rods, or said first and second side rod portions of said front and rear lower rods in mutual axial alignment.

4,483,027

FOLDABLE BUNK BED ASSEMBLY

James W. Cowell, Clearwater, and James E. Anderson, St. Petersburg, both of Fla., assignors to James A. Abdoney and Michael L. Thorpe, both of Tampa, Fla.

Filed Jun. 14, 1982, Ser. No. 387,972
Int. Cl.³ A47C *19/06*
U.S. Cl. 5—136 **7 Claims**

1. A wall bed comprising:

a pair of lateral post assemblies;

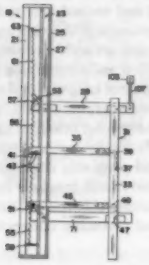
a first bed frame disposed with its proximate end adjacent to and pivotally coupled to said lateral post assemblies; and

a pair of leg assemblies coupled to the distal end of said bed frame, each of said leg assemblies comprising:

a foldable leg pivotally coupled to the distal end of said bed frame;

at least one rung having its proximate end disposed adjacent one of said lateral post assemblies;

first means for pivotally and displaceably coupling the distal end of said rung to said leg comprising an L-shaped member pivotally coupled at one end to said leg and secured at the other end to said rung; and



second means for pivotally and displaceably coupling the proximate end of said rung to one of said lateral post assemblies, whereby rotation of the bed frame results in the rotation of the leg with respect to the bed frame, the rotation and displacement of the rung with respect to the leg and the rotating and displacement of the rung with respect to the lateral post assemblies.

4,483,028

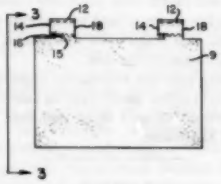
BABY SAFETY BARRIER

Shirley S. Payne, 1318 Turtle Creek, Manchester, Mo. 63011

Filed Mar. 21, 1983, Ser. No. 477,507

Int. Cl.³ A47C *21/08*

U.S. Cl. 5—426 **5 Claims**



1. A baby safety barrier comprising an upright panel, a platform panel and hinge means connecting said panels along adjacent edges thereof, said hinge means being mounted to rotate said panels between a position at which they are substantially parallel to and overlying one another and a position at which they are perpendicular to one another, said hinge means including interlocked pintles and knuckles secured along said panel edges and shiftable laterally with respect at one pivoted position to further one another to engage in locking condition at one shifted position and to disengage from locking condition at another oppositely shifted position selectively to lock said panels in a position substantially perpendicular or parallel to one another at selected pivotal positions.

4,483,029

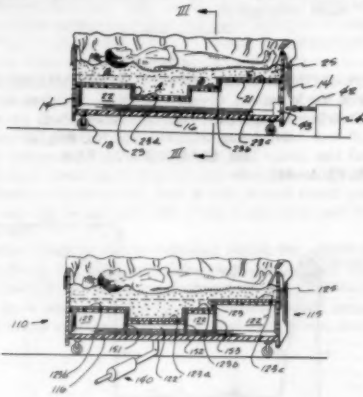
FLUIDIZED SUPPORTING APPARATUS

Patrick R. D. Paul, Charleston, S.C., assignor to Support Systems International, Inc.

Continuation-in-part of Ser. No. 291,486, Aug. 10, 1981, abandoned. This application Jul. 21, 1982, Ser. No. 400,381

Int. Cl.³ A61G *7/00*; A47C *27/08*

U.S. Cl. 5—453 **18 Claims**



1. An improved fluidizable patient support structure comprising:

(a) an open top container means;

(b) a mass of granular material received within said container;

(c) means for supporting non-fluidized granular material at predetermined varying depths within said container, said support means being porous to fluid passage and impervious to passage of granular material;

(d) means for fluidizing said granular material above said material support means, said fluidizing means and porosity of said material support means being correlated such that said granular material across said container is fluidized adequately to support all body areas of a patient in a supine position; and

(e) flexible means enclosing said granular material for receipt of a patient thereon, said flexible means permitting passage of fluid through at least a portion of same while precluding passage of granular material therethrough.

4,483,030

AIR PAD

Roland E. Flick; Ronald D. Wortman, both of West Seneca; Krstin Fotevski, Blasdell, all of N.Y., and John Whitney, Dorado Beach, P.R.X, assignors to Medisearch PR, Inc., Guayama, P.R.X

Filed May 3, 1982, Ser. No. 374,079

Int. Cl.³ A61G *7/04*; A47C *27/08*

U.S. Cl. 5—458 **7 Claims**

1. A fluid tight pad for supporting a body at minimum pressure on those portions of the body in contact with the pad comprising

a first layer of fluid-impervious material forming a top outer layer of the pad,

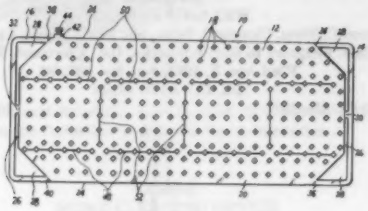
a second layer of fluid-impervious material forming a bottom layer,

a third layer of material forming a middle layer with an upper chamber above it and a lower chamber below it,

said top and bottom layers joined together around the periphery of said pad forming a fully air-impervious envelope,

selectively sealable port means in said envelope for injecting fluid therein,

said middle layer not precluding the flow of fluid from one side thereof to the other such that the pressure in the upper and lower chambers are equal, said middle layer being attached to said top layer at a plurality of attachment points in a first rectangular array and attached to said bottom layer at a plurality of attachment points in a



second and similar rectangular array, said first and second retangular arrays being offset from each other 180 degrees forming a series of small square cushion areas in said upper and lower chambers in rectangular patterns which are overlapping and offset from each other by 180 degrees, and

said first, second and third layers being sealed together along at least one line within the perimeter of said pad.

4,483,031

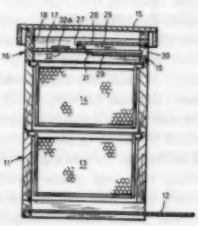
VENTILATING INNER COVER FOR BEEHIVES

Vladimir Shaparew, 3371 Trafalgar Rd., R.R. #1, Oakeville, Ontario, Canada L6J 4Z2

Filed Apr. 25, 1983, Ser. No. 488,366

Int. Cl.³ A01K *47/06*

U.S. Cl. 6—1 **7 Claims**



1. Beehive comprising:

a brood chamber;

a hive entrance below the brood chamber;

a cover on top of the brood chamber;

wherein the hive includes a ventilation tunnel, and one end or port of the tunnel opens inside the hive, and the other end or port opens to the air outside the hive;

wherein the cover comprises an inner cover and an outer cover, and wherein the tunnel is formed as part of the inner cover which is separate from, and adapted to fit underneath, the outer cover;

wherein the inner cover is spaced from the outer cover to leave an insulative air space therebetween, said air space being completely separate from and extending at least above said tunnel;

wherein the inner cover comprises a main panel that forms the roof of the hive, the panel being mounted in a frame;

wherein the main panel is made of sheet material;

wherein the width and height of the tunnel along its length are commensurate with the width and height of the ports;

wherein the height of the tunnel is not less than the thickness of the sheet material of said main panel; and

wherein the inner end port is placed substantially in the centre of the roof of the brood chamber, and the outer end port is placed so as to face in the same direction that the hive entrance faces.

4,483,032

PROCESS FOR TREATING TEXTILE MATERIAL IN JET DYEING MACHINES

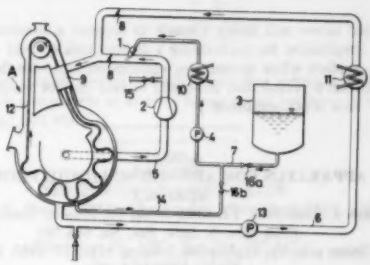
Wilhelm Christ, Michelbach; Hans-Ulrich von der Eltz, Frankfurt am Main, and Albert Reuther, Bad Soden am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 22, 1982, Ser. No. 436,048

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1981, 3142200

Int. Cl.³ D06B *3/28*

U.S. Cl. 8—149.1 **14 Claims**



1. In a process for the discontinuous or continuous wet treatment of textile material of synthetic or natural fibers or of mixtures of such fibers in rope form with dyestuffs suitable for the particular fiber type by the exhaust method or with other textile-finishing products on jet dyeing machines, in which the goods are propelled via a jet system by means of a circulated gas stream, the improvement wherein the textile goods are driven by a gas stream which is non-inert in respect of the intended specific treatment effect and, at the same time, the treatment agents or treatment agent formulations are added in an atomized form to this gas stream in the jet section for the goods drive and are thus brought into contact with the textile goods and allowed to act there corresponding to the preselected temperature and pressure conditions.

4,483,033

SERVICE DEVICE FOR THE INTERIOR VIEWING SURFACE OF A SIMULATOR DOME

Frank X. Gebert, Vestal, N.Y., assignor to The Singer Company, Binghamton, N.Y.

Filed Dec. 21, 1982, Ser. No. 451,982

Int. Cl.³ E04G *3/14*

U.S. Cl. 15—3 **5 Claims**

1. A service structure for the interior viewing surface of a simulator dome, comprising:

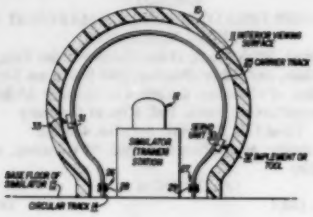
a circular track arranged on and supported by a base floor that supports said simulator dome the inner surface of which is arranged to provide a smooth, uninterrupted viewing surface for viewing, from a simulator training station, a scene projected thereon,

at least one arcuate carrier track arranged to begin from one end at said circular track extending in a direction substantially perpendicular to said circular track and at a substantially constant predetermined distance from said viewing surface to terminate at its opposite end at said circular track,

means disposed between said one end of said arcuate carrier

track and said circular track and between said opposite end of said arcuate carrier track and said circular track to permit said arcuate carrier track to be turned at least a full 360 degrees,

a servo unit adapted to be supported by said arcuate carrier track and to be indexed along its arcuate length uninterrupted from said one end to said opposite end, and



said servo unit being formed to support a predetermined implement for performing a desired task on said viewing surface while an operator remains on said base floor,

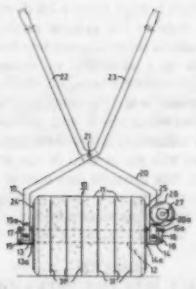
so that a preselected treatment of said interior viewing surface is accomplished.

4,483,034

APPARATUS FOR ABSORBING LIQUID FROM A SURFACE

Ruben J. Andersson, PL 1142, S-832 00, Frösön, Sweden

Filed Mar. 6, 1984, Ser. No. 586,788
Claims priority, application Sweden, Mar. 11, 1983, 8301321
Int. Cl.³ F01H *1/12*
U.S. Cl. 15—119 A **1 Claim**



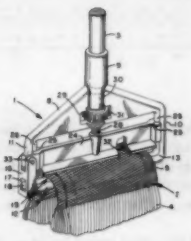
1. An apparatus for absorbing liquid from a surface, said apparatus comprising a substantially cylindrical, resiliently compressible, absorbant body mounted to an axial through shaft for rolling motion over a surface with the shaft substantially horizontal, end plates disposed on the shaft at either end face of the body, said plates having a diameter less than the diameter of the cylindrical body but greater than half thereof, a bearing sleeve mounted on each end of the shaft, each sleeve carrying an arm, which arms cross at a pivot point to form tongs, operation of which causes one of the bearing sleeves to move axially of the shaft with its associated end plate to compress the body, and an axle carrying two wheels mounted to one of the arms adjacent to and parallel with one end face of the body such that the apparatus may be transported on said wheels with the shaft substantially vertical, characterized in that the absorbant body comprises a plurality of circular discs of absorbant material, each pair of adjacent discs being sealed off from each other by means of an interposed foil such as plastics foils so that upon compression of the body each disc will discharge its liquid such as water at the edge portion of the disc.

4,483,035

WET MOP HOLDER

Theron C. Moss, Cleveland, Tenn., and Erwin Tomm, Cleveland, Ohio, assignors to Seco Industries, Inc., Cleveland, Tenn.

Filed Apr. 8, 1983, Ser. No. 483,385
Int. Cl.³ A47L *13/24*
U.S. Cl. 15—153 **10 Claims**



1. A wet mop holder comprising a main frame portion having a pair of laterally spaced apart side members, a loading bar rigidly cantilevered at one end to one of said side members and extending transverse relative to said main frame portion and spaced therefrom to provide an opening therebetween for receipt of the head of a mop swab, and side gate means pivotally connected to the other side member for movement between an open position permitting unobstructed insertion of a mop head into said opening from the side of said main frame portion and removal therefrom, and a closed position precluding such insertion and removal, the combined length of said other side member and side gate means being substantially equal to the length of said one side member, said side gate means having means thereon for supporting the free end of said loading bar when said gate means is in such closed position, a clamping bar, means for moving said clamping bar toward and away from said loading bar for releasably clamping a mop head against said loading bar, and guide means for guiding said clamping bar during such movement toward and away from said loading bar, said guide means comprising guideways on said side members, and grooves in the ends of said clamping bar having sliding engagement with said guideways, and another guideway on said side gate means engageable by the groove in one end of said clamping bar when said side gate means is in the closed position for assisting in guiding said clamping bar during such movement toward and away from said loading bar.

4,483,036

ARTIST'S PAINTING AID

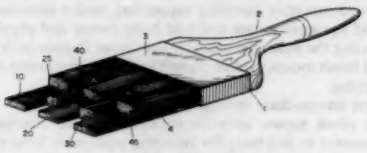
Alex R. Sayklay, 529 San Saba, El Paso, Tex. 79912

Filed Dec. 12, 1983, Ser. No. 560,750
Int. Cl.³ A46B *9/02*
U.S. Cl. 15—160 **5 Claims**

1. A bristled paint brush for obtaining a predetermined painted pattern comprising:

a plurality of layers of bristles arranged in a tiered fashion,

wherein each layer of bristles comprises bristles of varying lengths, forming a plurality of furcations, and



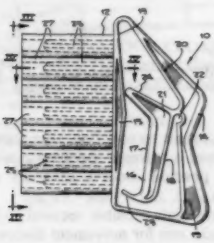
wherein said furcations in each layer of bristles are offset from the furcations in adjacent layers of bristles.

4,483,037

BLIND CLEANING DEVICE

Jeff A. Jacobson, 22 Woodgrove, Irvine, Calif. 92714

Filed Nov. 22, 1982, Ser. No. 443,334
Int. Cl.³ A47L *4/02*
U.S. Cl. 15—210 A **7 Claims**



1. In a blind cleaning device having a handle and a plurality of vertically spaced rigid fingers with cleaning elements extending from the handle, the improvement which comprises:

finger moving means interconnecting said fingers to said handle so that all of said fingers may be moved in unison simultaneously to clamp a blind slat between respective adjacent fingers with said cleaning elements being adapted to clean the entire surface of said clamped slats in a single pass of said slats; and

said finger moving means including a movable trigger on said handle and a main support having said fingers connected to said support and extending therefrom and a camming portion on said trigger adapted to cam against said main support when said trigger is squeezed to thereby move said main support which moves the fingers connected thereto.

4,483,038

MOTORIZED CHIMNEY CLEANING APPARATUS

Burnell G. Boehland, Creswell, and Donald G. Coutts, Eugene, both of Oreg., assignors to Speedy Automatic Chimney Sweep, Inc., Eugene, Oreg.

Filed Sep. 9, 1983, Ser. No. 530,781
Int. Cl.³ F23J *3/00*
U.S. Cl. 15—249 **12 Claims**

9. A chimney cleaning apparatus comprising,

a reversible electric motor,

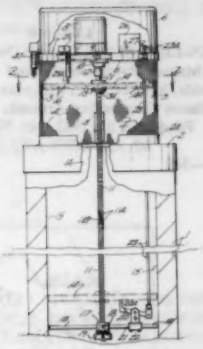
means for supporting said motor at one end of a chimney,

a screw shaft driven by said motor and adapted for lengthwise placement in a chimney,

means confining the shaft against lateral displacement,

a brush component adapted to travel along said shaft during shaft rotation to dislodge particles from the chimney interior,

means stabilizing the brush component against rotation, and



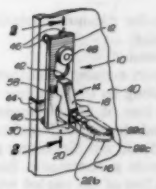
a motor control circuit including switches actuated by the brush component to confine brush travel between points along said shaft.

4,483,039

SHOE SUPPORT APPARATUS

Cydney E. Breen, 20223 Chapter Dr., Woodland Hills, Calif. 91364

Filed Sep. 29, 1983, Ser. No. 537,427
Int. Cl.³ A47L *23/18*
U.S. Cl. 15—268 **19 Claims**



17. A shoe support apparatus, comprising:

a base plate;

means for releasably mounting said base plate on a door, said means including an opening in said base plate through which a doorknob is receivable for suspending said base plate therefrom, and a C-shaped clamp pivotally mounted to said base plate for securing said base plate to the edge of the door generally adjacent the doorknob;

a heel support block having an upper mounting portion affixed to said base plate and a lower heel retaining portion, said heel retaining portion including a generally flat rear surface disposed in confronting spaced relationship to said base plate, said rear surface having an incline relative to said longitudinal axis of said toe support shaft such that the bottom part of said heel retaining portion extends furthest rearwardly, and said rear surface further having corner side edges to engage and grip the inside heel portion of the shoe;

a toe plate having a surface against which the toe portion of the shoe may be stretched and pressed when cleaning and polishing; and

a toe support shaft interconnecting said heel support block to said toe support plate, said toe support shaft extending in generally perpendicular relation to said base plate, said

toe support shaft capable of at least limited rotational movement about its longitudinal axis; and

means for spring-loading said toe support shaft along its longitudinal axis.

4,483,040

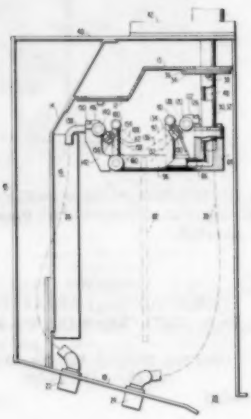
IN-LINE MASK CLEANING SYSTEM

Robert A. Magee, Poughkeepsie, and Lawrence P. Remsen, Stanfordville, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1982, Ser. No. 452,250

Int. Cl.³ B08B *3/02, 5/02*

U.S. Cl. 15—302 **13 Claims**



1. Apparatus for cleaning material from a surface of an object, comprising;

a cleaning chamber;

movable support member means within said chamber having extended along its length a line of liquid dispensing nozzles and a line of gas dispensing ports for respectively cleaning and drying said surface, said liquid dispensing nozzles and said gas dispensing ports arranged to respectively provide a continuous line of liquid spray and a continuous line of gas angled with respect to said surface so as to form a wedge therewith in the direction of motion of said movable support member means;

means for vertically moving said support member with respect to said surface; and

said means for vertically moving said respective lines of ports and nozzles oriented with respect to said object so that said liquid dispensing nozzles act to provide said continuous line of liquid spray to remove said material from said surface when said line of spray is moved vertically across said surface and said gas dispensing ports subsequently act to provide said continuous line of gas to remove said liquid from said surface when said line of gas is moved vertically across said surface, whereby said material and liquid deposit in said chamber below said surface for collection and removal.

4,483,041

SUPPORT FOR A SQUEEGEE ASSEMBLY

Steven J. Waldhauser, Niagara Falls, and Richard D. Masbruch, Ransomville, both of N.Y., assignors to Wetrok, Inc., Niagara Falls, N.Y.

Filed Sep. 30, 1982, Ser. No. 431,051

Int. Cl.³ A47L *7/00, 11/30*

U.S. Cl. 15—359 **7 Claims**

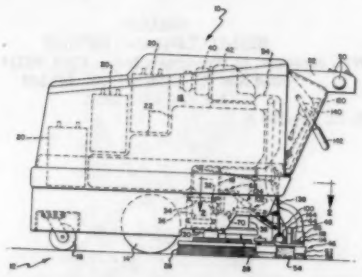
1. In a floor cleaning machine of the type having a body supported by front and intermediate wheels for movement in a forward direction, brush means, brush supporting means interconnecting said brush means and said body means and being capable of supporting the brush means in cantilever fashion to the rear of said intermediate wheels, a squeegee assembly, and improved squeegee assembly supporting means interconnecting said squeegee means and said body means and capable of supporting the squeegee means in cantilever fashion to the rear of said brush means, said improved squeegee supporting means comprising

a first intermediate member,

first pivot means interconnecting said first intermediate member to said body for swinging movement from side to side about a generally vertically extending axis,

arm means which extend in its normal working position in a generally rearwardly and downwardly direction,

second pivot means interconnecting a forward end portion



of said arm means to said first intermediate member for swinging from a lowered working position to a raised inoperative position about a generally transversely extending axis,

a second intermediate member secured to a rearward end portion of said arm for movement therewith,

third pivot means interconnecting a mid-portion of the squeegee assembly to said second intermediate member for rocking movement about a generally fore-and-aft extending axis, and

additionally characterized by said second intermediate member being provided with transversely extending aperture forming means below said fore-and-aft extending axis, and in which said machine is further characterized by the provision of lifting means, said lifting means including an intermediate cable portion which passes through said transversely extending aperture forming means.

4,483,042

LOCKING DEVICE FOR TRAILING WHEELS OF A WHEELED CARRIAGE

Glüser Dieter, Munich, Fed. Rep. of Germany, assignor to Peg Perego-Pines Deutschland GmbH, Munich, Fed. Rep. of Germany

Filed Sep. 21, 1982, Ser. No. 420,809

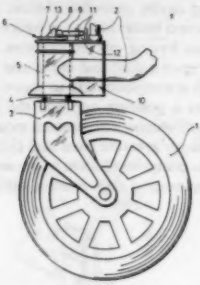
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1981, 3137433

Int. Cl.³ B60B *33/02*

U.S. Cl. 16—35 R **5 Claims**

1. In a locking device for locking a trailing wheel of a wheeled carriage in a straight-running position, said trailing wheel having an axis of rotation and being mounted for pivotal steering movement about a vertical axis extending perpendicular to the axis of rotation, but not intersecting it, wherein a support member carrying the axis of rotation of the trailing wheel is connected to a vertically extending sleeve mounted for rotation about the vertical axis in a concentrically surrounding cylindrical recess in the wheeled carriage, and wherein a resiliently deformable plug, extending through said recess from above and having a disk-shaped enlarged head

portion engaging a rim of an upper end face of said recess, is non-rotatably connected to said sleeve, the improvement comprising a substantially vertically extending engagement surface formed on said disk-shaped head portion of the plug and a



locking member pivotally mounted on the wheeled carriage for positive locking engagement with the engagement surface to thereby lock the wheel against pivotal movement about the vertical axis.

4,483,043

AUTOMATIC DOOR CLOSER

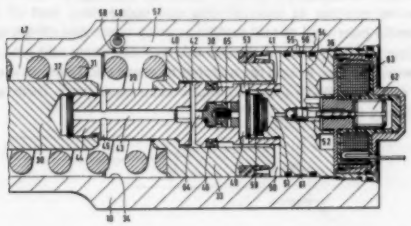
Horst Tillmann, Ennepetal, Fed. Rep. of Germany, assignor to Dorma-Baubechlag GmbH & Co. KG, Ennepetal-Voerde, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 225,404, Jan. 15, 1981, Pat. No. 4,376,323. This application Feb. 22, 1983, Ser. No. 468,305

Claims priority, application Fed. Rep. of Germany, Jan. 16, 1980, 3001406

Int. Cl.³ E05F *3/10, 3/22*

U.S. Cl. 16—56 **10 Claims**



1. An automatic door closer comprising an elongated fluid-filled housing having a closed end and an opposite open end; a plug closing said open end of said housing; a first piston reciprocatably arranged in said housing and dividing the latter into a first pressure space adjacent said closed end and a second pressure space adjacent said plug, said first piston having a cylinder space therein; a closer shaft adapted to be connected to a door, extending transverse to the elongation of said housing and being turnably mounted in said housing in the region of said closed end; means connecting said closer shaft with said first piston for moving the latter, during turning of the closer shaft in door-opening direction, in a first direction reducing the volume of said first pressure space while increasing the volume of said second pressure space, said piston-moving means comprising a piston rod slidingly guided in said first piston and having a free end facing said plug; spring means cooperating with said first piston for biasing the latter in a second direction opposite to said first direction; a second stationary piston formed as a projection of said plug and movably received in said cylinder space of said first piston; first throttled passage means communicating at one end with said first pressure space and at the other end with said cylinder space; second throttled passage means communicating at opposite ends respectively with said first and said second pressure space; and valve means in said second throttled passage means movable between a closed position preventing flow of fluid through said second passage means and an open position permitting flow of fluid through said second passage means.

4,483,044

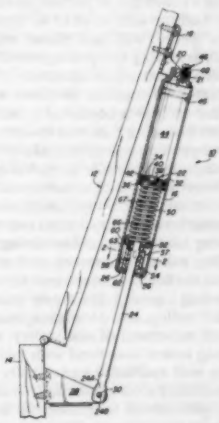
PNEUMATIC DOOR CLOSER HAVING RESILIENT BRAKING SLEEVE AND COOPERATING PISTON ROD INCREMENTAL BRAKING ENLARGEMENTS

James R. Johnston, Sterling, and Cordell E. Meiste, Morrison, both of Ill., assignors to National Manufacturing Co., Sterling, Ill.

Continuation-in-part of Ser. No. 424,059, Sep. 27, 1982, abandoned. This application Aug. 8, 1983, Ser. No. 521,155

Int. Cl.³ E05F *3/16*

U.S. Cl. 16—70 **7 Claims**



1. In a door closer attached to an associated door and having a rod which moves within resilient sleeve means for resisting said rod movement as said door is moved between fully open and closed positions, the improvement comprising

at least one enlargement on said rod, said enlargement being sized and longitudinally located on said rod so as to pass through said sleeve means and to increase the resistance of said sleeve means to movement of said rod therein while said door moves through a partially open position, and

means for longitudinally compressing said sleeve means as said door is moved from the closed position toward the fully open position,

said enlargement being elongated in the axial direction of said rod and continuously increasing in size along the entire length of said enlargement along the length of said rod for always continuously increasing the resistance of said sleeve means to said rod movement during the entire movement of said door from an intermediate position to the fully open position.

4,483,045

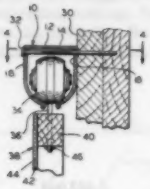
SELF-CLEANING, SELF-CENTERING DOOR TRACK HAVING AN INTEGRAL MOUNT

Kenneth B. Shelton; Klaus H. Herkert, and Lynn O. Twedt, all of Harvard, Ill., assignors to Erect-A-Tube, Inc., Harvard, Ill.

Continuation of Ser. No. 366,905, Apr. 9, 1982, abandoned. This application Jun. 20, 1984, Ser. No. 622,389

Int. Cl.³ E05D *13/02*

U.S. Cl. 16—95 R **2 Claims**



1. A door track for carrying a trolley supporting a door for rolling movement, comprising:

a longitudinally extending top wall having a pair of parallel opposed side edges, said top wall being adapted for coplanar abutment with a generally horizontal surface such as a beam of a building;

a longitudinally extending side wall depending from each of said side edges of said top wall, said side walls being identically shaped and oppositely facing, said side walls each including a planar upper portion joined to one of said side edges of said top wall so as to be disposed generally perpendicular thereto with said planar upper portions of said side walls extending to a point generally intermediate the uppermost and lowermost extremes of said side walls and being adapted for coplanar abutment with a generally vertical surface such as a header of a building, said side walls each also including a curved lower portion integral with the corresponding one of said planar upper portions so as to be disposed generally tangentially thereto with said curved lower portions of said side walls each extending along a continuous downward and inward curve to a point of termination at the lowermost extreme of said side walls and being adapted for self-centering of said trolley for non-binding rolling movement, said side walls being spaced apart at the lowermost extreme to define a longitudinally extending opening for freely receiving a door support of said trolley, said door track being self-cleaning by gravity and movement of said trolley; and

integral mounting means associated with said longitudinally extending top wall and said longitudinally extending side walls, said mounting means associated with said top wall comprising a plurality of longitudinally spaced fastener-receiving openings, said mounting means associated with said side walls comprising a plurality of longitudinally spaced fastener-receiving openings, said fastener-receiving openings in said side walls comprising aligned pairs of apertures in said planar upper portions adjacent said top wall, whereby each of said aligned pairs of apertures in said sidewalls are adapted to have a single fastener extending therethrough.

4,483,046

CRAB MEAT PROCESSING MACHINE

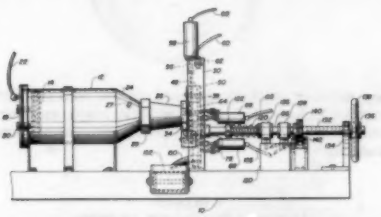
Charles D. Briddell, 335 Hill-N-Dale Dr., York, Pa. 17403

Continuation-in-part of Ser. No. 180,002, Aug. 21, 1980, abandoned. This application Jun. 1, 1982, Ser. No. 383,780

Int. Cl.³ A22C *7/00*

U.S. Cl. 17—32 **21 Claims**

1. A machine to form commercial-type lumps of crab meat from particles of crab meat smaller than commercial lumps thereof and comprising in combination, a cylinder adapted to receive cooked crab meat particles in moist condition and having a receiving end and an opposite discharge end, a piston reciprocable in said cylinder, a discharge nozzle of constricted size relative to said cylinder through which said cooked crab meat particles to be discharged is connected to one end of said cylinder, means to reciprocate said piston toward said discharge nozzle, a circular die member having a flat face and at least one molding cavity extending therein from said flat face and having a curved inner wall to produce a desired molded form of crab meat having curved surfaces, means to support said die member upon a shaft and move said die member rotatably by said shaft correspondingly to move said molding cavity into and from a position opposite the outer end of said discharge nozzle to receive compressed moist crab meat particles discharged under pressure from said cylinder and into said molding cavity in compressed form to impart the shape of said cavity to said compressed crab meat, a knife member slidably



supported closely between said flat face of said die member and said discharge nozzle, means to reciprocate said knife relative to a filled cavity in said die member to separate the molded lump of crab meat from the meat in said discharge nozzle, moisture retaining sealing means between said molding cavity and knife member and outer end of said discharge nozzle, means operable subsequently to move said die member and cavity to a discharge position, and means to eject said molded form of crab meat from said molding cavity comprising a plunger reciprocable relative to said die member and having a curved contour at least on one end comprising part of the curved inner wall of said molding cavity when said cavity is in filling position, and means operable to reciprocate said plunger toward the face of said die member to cause said contoured end of said plunger to eject a molded crab meat lump from said molding cavity.

4,483,047

PRODUCT SORTER UTILIZING A CONSTANT PERCENTILE WEIGHT DISTRIBUTION

Richard D. Linville, Jr., 1302 First Ave., Sterling, Ill. 61081

Filed Nov. 22, 1982, Ser. No. 443,210

Int. Cl.³ A22C *21/00*

U.S. Cl. 17—45 **14 Claims**

1. A method of processing a plurality of products which vary in weight with respect to one another, comprising the steps of

weighing said products individually,

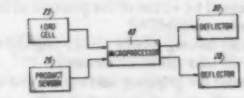
comparing the weight of each weighed product with a split weight

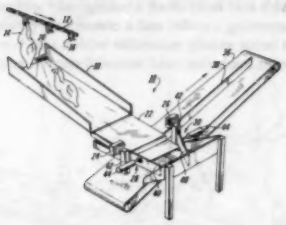
separating the lighter products having a weight less than said split weight from the heavier products,

processing the lighter products separately from the heavier products,

varying the split weight to maintain the numbers of said lighter and heavier products in a substantially constant predetermined ratio,

said split weight being related to the number of previously weighed products which were lighter than said split weight,





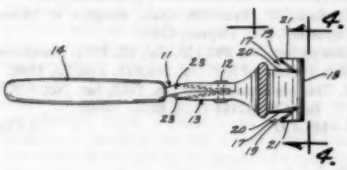
and the number of previously weighed products which were heavier than said split weight.

4,483,048

FISH SKINNING TOOL

Leroy H. Jackson, Rte. 1, Falkner, Miss. 38629

Filed Sep. 19, 1983, Ser. No. 533,304
Int. Cl.³ A22C *25/17*
U.S. Cl. 17—68 4 Claims



1. A fish skinning tool comprising a pair of elongated members pivotally interconnected intermediate their ends and having hand grips at one end thereof and jaw members at the other end thereof, each of said jaw members including an inwardly directed curved outer end portion terminating in a beveled edge thereon, the beveled edges of said outer end portions being directed towards each other and movable between a first relative position wherein said beveled edges are in contact with each other and a second relative position wherein said beveled edges are spaced substantially apart at least enough to receive a fish skin therebetween, the improvement comprising:

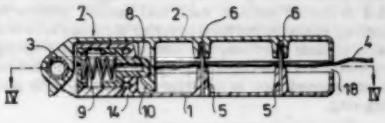
cutting means integrally formed in one piece with at least one of said jaw members, said cutting means comprising a notch in the side of said one jaw member at a place spaced from said beveled edge, said notch being defined by the space formed between a rearwardly extending projection having the inner edge thereof sharpened for cutting fish skin and an inner edge of said one jaw means connected to said sharpened inner edge.

4,483,049

THEFT-DETERRENT DEVICE

Bo O. Gustavsson, Gökvägen 9, S-141 72 Huddinge; Kerstin E. Gustavsson, Väpnarvägen 40, 145 72 Norsborg, and Inger A. Andersson, Majgårdsvägen 5, 141 44 Huddinge, all of Sweden

Filed Mar. 30, 1981, Ser. No. 249,232
Claims priority, application Sweden, Apr. 10, 1980, 8002757
Int. Cl.³ A44B *9/18*
U.S. Cl. 24—160 12 Claims



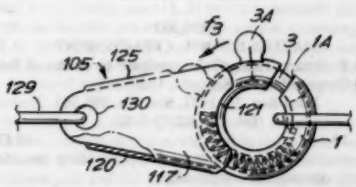
1. A device for discouraging theft on an article displayed for sale, which article is made of cloth, skin, leather or like materials, comprising means for attaching the device externally to said article, locking means for locking the device in said attached state in a manner preventing unauthorized disattachment of the device from the article, at least one closed space located within the device, a substance held in said closed space, said substance having the properties of adhering permanently to the material of said article, when brought in contact therewith, and rendering the article unfit for its intended use, and said closed space having at least one confining wall designed to be easily breakable when the device is subjected to undue external forces as a result of an attempt of unauthorized disattachment of the device from said article, whereby said substance is released to spread onto said article and to render it unfit for its intended use, comprising a first member and a second member having mutually facing surfaces and being movable relative each other between an open position and a closed position, a part of said article being inserted and captured between said mutually facing surfaces in said closed position, said fastening means including metal pins fixedly mounted in said first member projecting outwardly from said surface of said first member towards said surface of said second member and corresponding recesses in said surface of said second member for receiving said metal pins when said first and second members are in said closed positions, and said locking means including mutually co-acting locking elements located in said first and second members, respectively, and separated from said pins for locking said first and second members in said closed position.

4,483,050

SPRING-RING CLOSURES FOR NECKLACE-COLLARS BRACELETS AND OTHERS

Maurizio Nanni, and Valdo Sestini, both of Arezzo, Italy, assignors to Uno-A-Erre Italia S.p.A., Arezzo, Italy

Filed Aug. 27, 1982, Ser. No. 412,212
Claims priority, application Italy, Sep. 8, 1981, 9509 A/81
Int. Cl.³ A44B *13/02*
U.S. Cl. 24—239 1 Claim



1. A closure for a necklace-collar, bracelet and the like, comprising a spring-ring of gapped loop form, a sliding catch

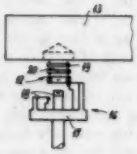
within the ring, a spring within the ring to urge the sliding catch towards a gap closing position, a lug secured to the spring ring for engagement with a non-gapped loop, the lug having two substantially parallel laminar portions connected to the spring ring by soldering or welding and a length greater than the diameter of the ring, said two laminar portions converging away from said spring-ring, the edges of said laminar portions attached to said spring catch being concavely curved in accordance with the curve of said spring-ring, said two laminar portions being formed from a single sheet of material folded in spaced relation, each said laminar portion having depending lateral lip portions covering the space between each of said laminar portions, the end opposite said spring-ring being free from said depending lips to permit the insertion of said non-gapped loop in coplanar relationship with said first spring-ring.

4,483,051

METHOD OF MAKING BULLET FOR A FIREARM

Eric Gruaz, 4, avenue Marechal Foche, Lyon 6eme Rhone, France

Division of Ser. No. 140,826, Apr. 16, 1980, Pat. No. 4,365,559. This application May 28, 1982, Ser. No. 383,172
Claims priority, application France, Apr. 17, 1979, 79 10417
Int. Cl.³ B21K *21/06*
U.S. Cl. 29—1.22 **2 Claims**



1. A method of making a bullet for a cartridge for a firearm, said cartridge comprising:

a bullet having a head and a shank extending axially from said head, said shank being formed with at least one axially extending groove and a plurality of circumferential grooves;

a casing of synthetic material receiving said shank and provided with a plurality of internally projecting annular ribs of a number equal to the number of said circumferential grooves and received therein, said bullet defining a space at the bottom of said casing which is vented through said axial groove; and

an explosive charge received in said space and adapted to be introduced into said casing in a moist state;

said method comprising the steps of:

(a) forming a bullet blank with a head and a shank;

(b) axially forcing a tool having inwardly projecting cutters onto said shank to cut respective axially extending grooves therein; and

(c) rotating said tool to swing said cutters around said shank and cut circumferential grooves therein.

4,483,052

MACHINE TOOL ATTACHMENT

Howard P. Stuart, Tulsa, Okla., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 24, 1981, Ser. No. 305,303
Int. Cl.³ B23Q *3/02*
U.S. Cl. 29—57 **10 Claims**

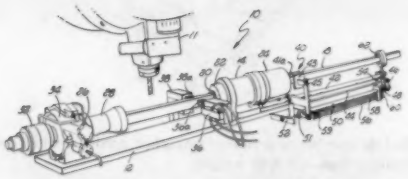
1. A machine tool attachment for positioning material for machining operations, comprising:

a tail stock housing having a tubular passage therethrough;

first gripper means for gripping said material in said tail stock housing, said first gripper means coupled for rotation with said tail stock housing, said first gripper means comprising a collet and a connecting power means, said collet being axially moveable within said tubular passage by said power means such that said material can be gripped and released by virtue of the position of said collet within said tubular passage;

a head stock housing having a bore axially aligned with said tubular passage of said tail stock housing;

second gripper means for gripping said material in said head stock housing, said second gripper means coupled for rotation with said head stock housing, said second gripper means comprising a collet and a connecting power means, said collet being axially moveable within said bore by said power means such that said material can be gripped and



released by virtue of the position of said collet within said bore;

advancing means for advancing material through said tail stock and into said head stock such that said material is in a machining position;

positioning means for rotating said head stock and said tail stock to sequentially position said material to perform machining operations, said positioning means including a synchronization means for synchronizing rotation of said head stock and said tail stock such that said head stock and said tail stock rotate in unison and said material is uniformly rotated; and

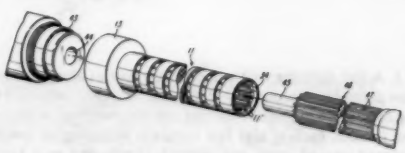
resilient ejecting means in said head stock housing for ejecting a material stub after said material is machined.

4,483,053

METHOD OF MAKING AN INK ROLLER

Paul H. Hamisch, Jr., Franklin, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Continuation of Ser. No. 282,123, Jul. 10, 1981, abandoned, which is a division of Ser. No. 161,813, Jun. 23, 1980, abandoned. This application Mar. 28, 1983, Ser. No. 479,767
Int. Cl.³ B21H *1/14*; B23P *19/00*
U.S. Cl. 29—148.4 D **4 Claims**



1. Method of making an ink roller, comprising the steps of: providing an annular mold cavity having a longitudinal axis and lateral ridge means and intervening lateral groove means on its inner periphery, providing a core having a plurality of longitudinally extending flutes, the outside diameter of the core at the flutes being the same as the inside diameter of the mold cavity at the ridge means, inserting the core into the mold cavity to provide a liquid-tight seal against flow of moldable plastics material where the ridge means and the flutes intersect, filling the space between the mold and the core with moldable plastics material to form a tube having spaced openings at the intersections of the ridge means and flutes, removing the tube from the mold cavity and the core, placing a tubular porous ink-receptive sleeve over the tube, introducing ink into the

interior space within the tube, and closing off an end portion of the tube.

4,483,054

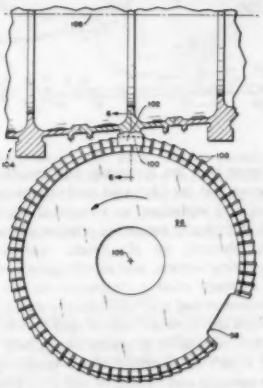
METHOD FOR MAKING A DRUM ROTOR

Walter A. Ledwith, North Palm Beach, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Nov. 12, 1982, Ser. No. 441,451

Int. Cl.³ B21K *3/04*; B23P *15/02, 15/04*

U.S. Cl. 29—156.8 R **2 Claims**



1. In a method for manufacturing a drum rotor comprising a unitary cylinder-like drum having an axis and a plurality of axially spaced apart, enlarged annular rim portions, each rim portion including a radially outwardly extending portion having forwardly and rearwardly facing annular surfaces, each rim portion including a plurality of circumferentially spaced apart blade root slots extending therethrough from said forwardly facing to said rearwardly facing surface, the steps of:

fabricating a plurality of separate drum sections, each section including at least one of said enlarged annular rim portions without said blade root slots therethrough, each drum section having an axis and including a cylinder-like wall extending axially outwardly from said enlarged rim portion;

joining said drum sections together to form said unitary cylinder-like drum without blade root slots by inertia bonding or welding the end of said cylinder-like wall of one of said drum sections to the end of a cylinder-like wall of an adjacent drum section, said joined ends being at the same radius and said adjacent drum sections having a common axis; and

after said step of joining, machining a plurality of circumferentially spaced apart curved blade root slots through each of said rim portions from said forwardly to said rearwardly facing surface using a circular broach, each of said slots being machined by rotating said broach about an axis located radially outwardly of said rim portion, whereby each of said slots is curved along its length in the plane of the broach.

4,483,055

SECONDARY WORKING APPARATUS

Hironobu Sekimoto, and Norio Sato, both of Fuji, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jun. 14, 1982, Ser. No. 388,134

Claims priority, application Japan, Aug. 27, 1981, 56-134708

Int. Cl.³ B23P *15/14*; B23F *19/06*

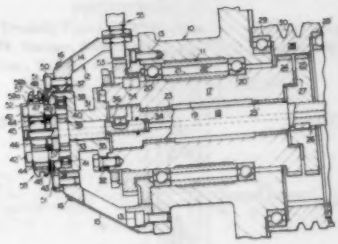
U.S. Cl. 29—159.2 **12 Claims**

1. A secondary working apparatus for secondarily machining a blank preliminarily formed with internal serrations on a cylindrical plane having a center axis therethrough, comprising

a stationary housing structure;

support means for supporting the blank with the center axis of said cylindrical plane fixed with respect to the housing structure;

a plurality of shafts each having a center axis substantially parallel with the center axis of said cylindrical plane and rotatable with respect to said housing structure about an axis substantially coincident with the center axis of said cylindrical plane and an axis substantially coincident with the center axis of the shaft, each of the shafts having a cylindrical eccentric axial portion having a center axis



substantially parallel with and radially offset from the center axis of the shaft;

generally cylindrical machining tools coaxially carried on the eccentric axial portions of said shafts, respectively, and each having a center axis substantially coincident with the center axis of the eccentric axial portion of each of said shafts; and

an annular guide gear coaxially held in position about said center axis of said cylindrical plane and formed with internal teeth to be held in mesh with said machining tools, said internal teeth being equal in number to the internal serrations of the blank and being cut with outwardly shifted tooth profiles.

4,483,056

TOOL FOR CLOSING PIPE COUPLINGS

Dieter Schwalm, Bielefeld, and Rainer Neumann, Herten, both of Fed. Rep. of Germany, assignors to Kurt O. Moeblus and Hackforth GmbH & Co. KG, both of Herne, Fed. Rep. of Germany, a part interest

Filed Jul. 13, 1982, Ser. No. 397,836

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1981, 3129204

Int. Cl.³ F16L *35/00*

U.S. Cl. 29—237 **14 Claims**

1. A tool for closing pipe couplings between metal pipes, the end of one pipe being closingly engageable in a widened terminal part of the other pipe, a sleeve ring being pressed axially onto the widened part over the end face thereof, characterised by the following features:

at least two pressing jaws (1, 2) movable towards and away from one another are mounted on a guide extending parallel to the pipe axis and are forked in the pipe-engaging zone to enable the tool to be so engaged on the pipes (4, 5) to be joined together as to extend transversely of the axis thereof;

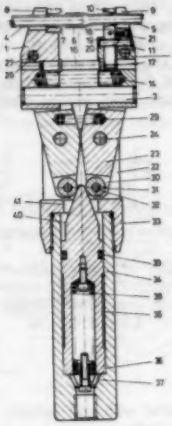
on one of the two pressing jaws (1 or 2) a forked part adjacent the other such jaw is widened in accordance with the diameter of the sleeve ring (7), the transition between the widened part and the unwided part being in the form of a shoulder (8) which extends perpendicularly to the pipe axis and which serves as axial abutment for the sleeve ring (7);

the other pressing jaw (2) comprises a static outer forked

part (9) and an inner forked part formed by two tongs-action clamping jaws (10);

the outer ends of the clamping jaws (10) are half-shells (12) disposed in laterally inverted relationship to one another, the inner shell surfaces being adapted to the pipe periphery;

the half-shells (12) are adapted on the inside edge (13) to the



wall shape of the conical transition between the unwidened part and the widened part of the pipe;

an actuating pin (16) disposed parallel to the direction in which the pressing jaws (1, 2) are guided is secured to the pressing jaw (1) having the static forked part and acts during the closing movement of the pressing jaws (1, 2) to close the clamping jaws (10), and

means provided to actuate the pressing jaws.

4,483,057

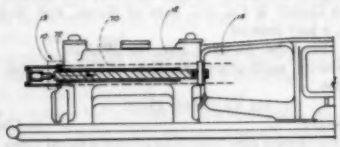
STUFFING BOX REMOVAL APPARATUS

Eldridge Trimble, Rte. 1, Box 1017, St. Martinville, La. 70582

Filed Dec. 30, 1981, Ser. No. 335,826

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—252 **4 Claims**



1. An apparatus for removing stuffing box from a downhole mud pump, which comprises:

a. an elongated guide means adapted to be inserted into said pump in lieu of a pump piston, said guide means having a bore therethrough for insertion of a ram there into;

b. a ram means, insertible along substantially the entire length of said guide means, which hold said ram means in coaxial relation to said bore along its entire length;

c. a cylindrical hollow mounting means coaxially fixedly attached to said guide means at one end thereof, said mounting means being adapted to fixedly engage an end portion of said pump at a point of attachment of the pump head to said pump;

d. a rearward mounting means connected to said last mentioned mounting means and extending outwardly from said pump and having an annular bore substantially through its entire length, said annular bore coaxially communicating with said bore of said guide means, said annular bore including means to receive a hydraulic pressure means to move said ram means laterally outwardly from said guide means in forceable contact with the stuffing box to be removed.

4,483,058

IMPACT HAMMER ELBOW TOOL

Melvin E. Clutter, and Lewis A. Shaw, both of Centralia, Mo., assignors to A. B. Chance Company, Centralia, Mo.

Filed Mar. 3, 1983, Ser. No. 471,868

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—254 **3 Claims**

1. An appliance tool for removing and installing electrical connector elbows and the like, said tool comprising:

an elongated rod including an elongated forward section having an electrically insulative portion adjacent the rearward end thereof, an elongated, rearward, hammer means-receiving section, and an elongated, rearmost handle, said forward section, rearward section and handle being interconnected and substantially axially aligned;

means adjacent the forward end of said forward section of said rod for releasably gripping said elbow or the like including a pair of opposed elbow-engaging jaws, and means for opening and closing of said jaws from the end of said rod remote from said jaws and without the need for manual manipulation adjacent said jaws;

tubular hammer means telescoped onto said hammer means-receiving section and reciprocally slidable fore and aft therealong; and

structure defining a pair of anvil surfaces operatively secured to said rod for defining the fore and aft stroke limits and hence the stroke length of said hammer means, said stroke length being of lesser length than the length of said forward section of said rod, one of said surfaces being oriented for engagement by said hammer means when the hammer means is slid along said rod in a forward direction, the other of said surfaces being oriented for engagement by said hammer means when the hammer means is slid along said rod in a rearward direction opposite said forward direction, said anvil surfaces each serving to transmit hammering forces imparted thereto by said hammer means along the length of said rod and to said gripping means,

said hammer means-receiving section, handle, hammer means and anvil surface-defining structure being spaced and electrically separate from said appliance-gripping means.

4,483,059

CLAMPING AND SPACING TOOL

Timothy C. Dearman, P.O. Box 937, Pearland, Tex. 77581

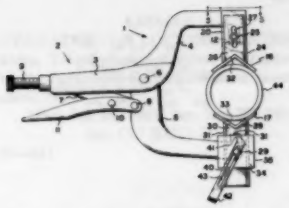
Continuation of Ser. No. 299,045, Sep. 3, 1981, abandoned. This application Apr. 20, 1983, Ser. No. 486,565

Int. Cl.³ B23Q *3/18*

U.S. Cl. 29—272 **15 Claims**

1. A welder's clamp comprising a pair of arms connected to one another for rotation about a pivotal axis; a first jaw; means mounting said first jaw on one of said arms for movement therewith; a second jaw; means mounting said second jaw on the other arm of said pair of arms for movement therewith, said jaws being movable in response to movements of said arms about said pivotal axis into and out of clamping engagement with opposite sides of a tubular member having a longitudinal axis; frame means carried by one of said jaws; a first scribe;

means mounting said first scribe on said frame means for rotary and reciprocable linear movements in a first plane perpendicular to said pivotal axis into and out of engagement with a tubular member clamped between said first and second jaws; a second scribe; and means mounting said second scribe on said frame means for rotary and reciprocable linear movements into



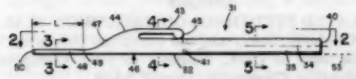
and out of engagement with such tubular member and in a second plane parallel to and spaced a fixed distance from said first plane, said frame means and the mounting means of the respective scribes cooperating to preclude varying the parallelism of and the fixed distance between said first and second planes.

4,483,060

GUN ASSEMBLING AND DISASSEMBLING TOOL

Frank W. Farrar, Los Alamitos, and Carl J. Cupp, Hawaiian Gardens, both of Calif., assignors to Pachmayr Gun Works, Inc., Los Angeles, Calif.

Filed Dec. 16, 1982, Ser. No. 450,478
Int. Cl.³ B25B *27/14*
U.S. Cl. 29—278 **7 Claims**



1. A tool for use in assembling a gun which includes a receiver, a safety having a portion at a side of the receiver and pivotally connectable thereto, a spring pressed safety detent plunger, a slide lock, and a slide lock plunger; said tool comprising:

an elongated body of resinous plastic material having a handle portion at one end by which the tool is held and manipulated and a projection at its opposite end for holding said plungers depressed during assembly of the gun;

said projection being molded integrally with said handle and projecting therefrom essentially parallel to a predetermined axis, and terminating at an end edge of the projection which is disposed essentially transversely of said axis;

said projection being essentially flat and adapted to be inserted laterally between said receiver and said portion of the safety to a position in which said end edge of the projection engages said safety detent plunger and holds it depressed while the safety is moved into close enough proximity to the receiver to itself hold the safety detent plunger depressed while the projection is withdrawn;

said projection having two oppositely facing surfaces at opposite sides thereof extending essentially parallel to one another and to said axis and adapted to engage said receiver and said portion of the safety respectively when the projection is received therebetween;

said projection having a thickness dimension between said oppositely facing essentially parallel surfaces which is not over about 0.080 of an inch through a length of at least about 0.700 of an inch from said transverse end edge of the projection, and having a width dimension perpendicular to said thickness dimension which is substantially greater than said thickness dimension but not over about 0.415 of an inch through said length of at least about 0.700 of an inch from said end edge;

said handle portion having a thickness dimension substantially greater than that of said projection;

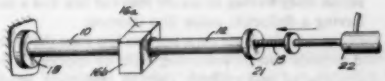
said resinous plastic material of which said handle and projection are molded integrally having a Shore hardness between about 70 and 80 on the D scale rendering the projection sufficiently stiff to effectively depress the plungers during assembly of the gun but not hard enough to scratch the contacted surfaces of the gun.

4,483,061

DOUBLE WALLED TUBING AND PROCESS FOR PRODUCING SAME

Gerald R. Trudell; Theodore F. Kraska, both of Pinconning, and Dennis W. Barber, Kawkawlin, all of Mich., assignors to APX Group, Inc., Toledo, Ohio

Filed Sep. 28, 1982, Ser. No. 425,891
Int. Cl.³ B23P *11/02, 19/02*
U.S. Cl. 29—523 **9 Claims**



1. A method for producing double walled tubing, comprising:

selecting first and second metal tubes of substantially identical diameters, said first and second tubes including longitudinally extending seams;

expanding the diameter of one end of said second tube; and

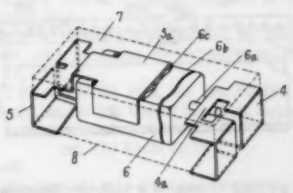
pushing said first tube into said second tube for substantially the entire length of said second tube such that the respective seams in said first and second tubes are angularly separated from each other by about ½".

4,483,062

METHOD FOR MANUFACTURING SOLID ELECTROLYTE CONDENSERS

Tsutomu Irikura, Joyo, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

PCT No. PCT/JP81/00304, § 371 Date Jun. 11, 1982, § 102(e) Date Jun. 11, 1982, PCT Pub. No. WO82/01618, PCT Pub. Date May 13, 1982
PCT Filed Oct. 28, 1981, Ser. No. 394,995
Claims priority, application Japan, Oct. 31, 1980, 55-154252
Int. Cl.³ H01G *9/24*
U.S. Cl. 29—570 **7 Claims**



1. A method of manufacturing a solid electrolyte condenser, comprising the steps of:

a. providing a condenser element which includes a layer of semiconductor metal, a cathode layer and a cathode current collecting layer sequentially deposited on an anode body having an anode lead-out line and a surface having a dielectric oxide film thereon;

b. forming a solder layer on a portion less than the whole of said cathode current collecting layer by applying a flux to said portion and subsequently dipping the condenser element into a solder bath;

c. remelting and subsequently solidifying the solder layer while contacting the solder layer with a cathode terminal so as to connect the cathode terminal to the cathode current collecting layer;

d. connecting an anode terminal to the anode lead-out line; and

e. encapsulating the condenser element after the anode and cathode terminals are respectively connected to the anode lead-out line and the cathode current collecting layer.

5. A method of manufacturing a solid electrolyte condenser, comprising the steps of:

a. providing a condenser element which includes three layers, including

(1) a layer of semiconductor metal,

(2) a cathode layer, and

(3) a cathode current collecting layer formed of a solderable electroconductive portion and a non-solderable electroconductive portion, sequentially deposited on an anode body having an anode lead-out line and a surface having a dielectric oxide film thereon;

b. forming a solder layer on a portion less than the whole of said cathode current collecting layer by applying a flux to the whole of said cathode current collecting layer and subsequently dipping the condenser element into a solder bath to form the solder layer on the solderable portion of the cathode current collecting layer;

c. remelting and subsequently solidifying the solder layer while contacting the solder layer with a cathode terminal so as to connect the cathode terminal to the cathode current collecting layer;

d. connecting an anode terminal to the anode lead-out line; and

e. encapsulating the condenser element after the anode and cathode terminals are respectively connected to the anode lead-out line and the cathode current collecting layer.

4,483,063

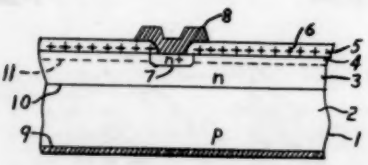
OXIDE CHARGE INDUCED HIGH LOW JUNCTION EMITTER SOLAR CELL

Arnost Neugroschel; Shing-Chong Pao; Fred A. Lindholm; Jerry G. Fossum, all of Gainesville, Fla., and Chih-Tang Sah, Urbana, Ill., assignors to University of Florida, Gainesville, Fla.

Division of Ser. No. 230,682, Feb. 2, 1981, Pat. No. 4,343,962, which is a continuation of Ser. No. 57,648, Jul. 16, 1979, abandoned. This application Jun. 1, 1982, Ser. No. 383,617

Int. Cl.³ H01L *31/18, 31/06*

U.S. Cl. 29—572 **2 Claims**



1. In a method of making a high-low junction emitter n-p solar cell which comprises providing a wafer including an n-type emitter and a p-type substrate, maintaining said wafer at an elevated temperature in an atmosphere consisting essentially of oxygen to form an oxide layer on said emitter, forming an opening in said layer, providing an n^+ diffusion under said opening, maintaining the wafer at a lower elevated temperature in dry oxygen to increase the oxide charge density, and applying a conductive material in said opening in contact with said n^+ diffusion.

4,483,064

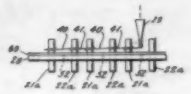
PROCESS OF MULTIPLE FUSE CONSTRUCTION

Elliot Bernstein, Rockville Centre, N.Y., assignor to Bel Fuse, Inc., Jersey City, N.J.

Continuation-in-part of Ser. No. 400,605, Jul. 22, 1982, abandoned. This application Sep. 30, 1982, Ser. No. 431,017

Int. Cl.³ H01H *69/02*

U.S. Cl. 29—623 **9 Claims**



1. The method of manufacturing fuses in multiple comprising the placement of pairs of pins in rows along a block of insulating material, wherein the pins extend on both sides of said block, arranging fuse links between adjacent pins, thereby forming a fuse link between pairs of pins which are eventually to form a fuse, applying a body member on the side of said block carrying the fuse links, enclosing the fuse links and securing the body member to said block and then cutting fuses apart along two axes on said block to form a plurality of fuses.

4,483,065

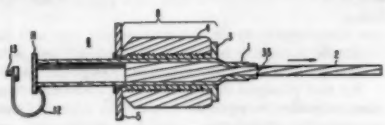
INSULATED FEEDTHROUGH EXPANSION SEAL

Theodore O. Meyer, Sunnyvale, and Gerrit van Ommering, San Francisco, both of Calif., assignors to Ford Aerospace & Communications Corporation, Detroit, Mich.

Division of Ser. No. 297,374, Aug. 28, 1981, Pat. No. 4,401,734. This application Nov. 29, 1982, Ser. No. 445,383

Int. Cl.³ H01M *6/00*

U.S. Cl. 29—623.2 **2 Claims**



1. Method for fabricating an electrically insulative seal between first and second electrically conductive electrodes, comprising the steps of:

forming a hole of roughly cylindrical shape through said first electrode;

forming a compressible dielectric sleeve within said first electrode, said sleeve having roughly the shape of a hollowed-out cylinder;

fitting the outer surface of said second electrode within said dielectric sleeve;

forming a hole through said second electrode roughly in the shape of a cylinder;

placing within the hole in said second electrode a rigid pin of roughly cylindrical shape and having a first region with a first outer diameter and a second region with a second outer diameter greater than the first outer diameter; and

drawing said pin through said second electrode whereby the second region of said pin causes said second electrode to

deform radially outwardly and further causes said dielectric sleeve to compress between said first and second electrodes;

the first and second regions of said pin being left within said second electrode so as to continue to apply a radial outward force on said second electode and on said dielectric sleeve.

4,483,066

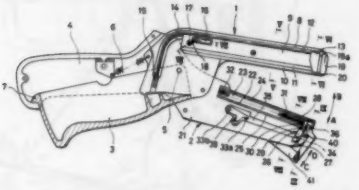
APPARATUS FOR LOCKING FASTENERS

Furutsu Akira, Tokyo, Japan, assignor to Japan Bano'k Co., Ltd., Tokyo, Japan and Ben Clements & Sons, Inc., South Hackensack, N.J.

Filed Jul. 28, 1981, Ser. No. 287,593

Int. Cl.³ B23Q *7/10*

U.S. Cl. 29—811 **6 Claims**



1. Apparatus for locking self-lockable fasteners individually including an intergrally formed socket having a through aperture, and an inserting part having two spaced apart lump portions, and an intermediate filament connecting together said socket and said inserting part, comprising:

a socket holder having forward and rearward ends and a groove for holding sockets of a plurality of fasterners in series and a pusher for forcing said plurality of serially arranged sockets toward an opening at said forward end of said socket holder;

an inserting part holder having forward and rearward ends and a groove for holding inserting parts of said plurality of fasteners in said serial arrangement as above, and a pusher for forcing said plurality of serially arranged inserting parts toward an opening at said forward end of said inserting part holder,

said socket holder and said inserting part holder being structuraly engaged with each other so as to approach and part relative to each other when said apparatus is operated, said socket holder and said inserting part holder respectively having a grip handle connected at said respective rearward ends, said handles being operable to produce said approaching and parting motion relative to each other; and

pressing means for pressing the inserting part of a first fastener located in said opening at said forward end of said inserting part holder into said through aperture of said socket of said first fastener located in said opening at said forward end of said socket holder, said pressing means including a gripper for holding said inserting part of said first fastener, said gripper being formed with a groove therein, so that said inserting part when held by said gripper is held in said groove, said gripper engaging said inserting part between said two spaced-apart lump portions, said pressing means further including a lever having a first end and a second end, said lever being pivotally coupled to said inserting part holder at said second end, said gripper being affixed to said first end of said lever, said second end of said lever being further coupled to said socket holder, so that when said grip handles are operated to bring said socket holder and said inserting part holder together, said first end of said lever will pivot towards said socket holder wherein said gripper affixed to said first end of said lever will move from a position at said forward end of said inserting part holder upwardly and rearwardly to a position at a point below the forward end of said socket holder, wherein said gripper will carry said inserting part of said first fastener held in said inserting part holder to said socket of said first fastener located at said forward end of said socket holder, pressing said held inserting part into said socket of said first fastener.

4,483,067

METHOD OF MANUFACTURING AN IDENTIFICATION CARD AND AN IDENTIFICATION MANUFACTURED, FOR EXAMPLE, BY THIS METHOD

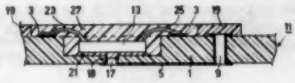
Paul Parmentier, Cailly-sur-Eure, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 10, 1982, Ser. No. 416,791

Claims priority, application France, Sep. 11, 1981, 81 172321

Int. Cl.³ H05K *3/34*

U.S. Cl. 29—890 **1 Claim**



1. A method of manufacturing an identification card in which an integrated semiconductor circuit is brought into electrical contact on both sides with conductor patterns on at least one side of a secondary carrier which is subsequently mounted, together with the integrated circuit, in a primary carrier, the integrated circuit being enclosed by a quantity of electrically insulating material which fills a recess in one of said carriers, comprising the steps of:

providing the secondary carrier (**11**) which comprises a conductor pattern (**3, 5**) on both sides with at least one plated-through hole (**7**);

providing a recess (**15**) subsequently at the area of said hole (**7**) in the secondary carrier (**11**);

said recess (**15**) opening into the part (**17**) of the plated-through hole (**7**) which remains after the formation of the recess (**15**);

arranging the integrated circuit (**13**) subsequently in the recess (**15**) and connecting it on one side, by means of an electrically conductive bonding medium (**21**) and the metal hole plating (**18**), to the conductor pattern (**5**) on one side of the secondary carrier (**11**), and connecting its other sidesubsequently to the conductor pattern (**3**) on the other side of the secondary carrier (**11**).

4,483,068

RAZORS, RAZOR BLADES AND RAZOR BLADE DISPENSERS

Glynne F. Clifford, Staines, England, assignor to Wilkinson Sword Limited, England

PCT No. PCT/GB81/00075, § 371 Date Nov. 25, 1981, § 102(e) Date Nov. 25, 1981, PCT Pub. No. WO81/03141, PCT Pub. Date Nov. 12, 1981

PCT Filed Nov. 25, 1981, Ser. No. 324,896

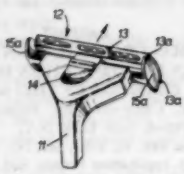
Claims priority, application United Kingdom, Apr. 30, 1980, 8014233

Int. Cl.³ B26B *21/14*

U.S. Cl. 30—49 **5 Claims**

1. The combination of a razor blade and holder for the razor blade, wherein said blade comprises a generally rectangular foil having a plurality of holes extending therethrough, the peripheries of said holes forming cutting edges in the blade and the holder is provided with means by which the blade can be picked up from a razor blade dispenser, said means including a blade receiving track formed by a spaced pair of inwardly directed flanges adapted to engage opposite sides of the blade, the spacing between said flanges being less than the distance between said sides when said blade is unrestrained, whereby

said blade is maintained in a convexly flexed condition for shaving, wherein the holder has means for covering each end of said track when a blade is held in said track, whereby each end of the blade is shielded from engagement with the skin of the user, and



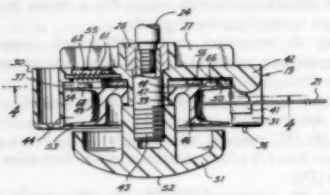
wherein the means on the holder for picking up a blade is movable relative to the handle of the holder between a blade pick-up position at which the ends of said track are uncovered and a shaving position at which said ends are covered.

4,483,069

APPARATUS FOR CUTTING VEGETATION

Robert J. Moore, Fontana, Calif., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Aug. 1, 1979, Ser. No. 62,871
Int. Cl.³ A01D *55/00*
U.S. Cl. 30—276 **5 Claims**



1. A filament-type trimmer comprising:
a rotatable housing;
at least one spool rotatably supported within said housing having at least one filament wound about said spool;
guide means disposed on said housing for guiding an end portion of said filament from said spool to the exterior of said housing wherein said end portion of said filament is extended from said housing by centrifugal force upon rotation of said housing;
means for rotatably driving said housing; and
control means comprising a single thin flat cam and biasing means for urging said cam into a first position in response to the rotational speed of said housing being below a selected speed, said control means for increasing the length of said end portion of said filament by a selected substantial amount in direct response to the rotational speed of said housing exceeding said selected speed and for detecting a decrease in the rotational speed of said housing due to said increased length of said end portion of said filament.

4,483,070

PORTABLE BACKPACKED CUTTER

Howard C. Junkermann, Fairfax, Va., assignor to Joane G. Tannehill, Staunton, Va., a part interest

Filed Sep. 21, 1982, Ser. No. 420,896
Int. Cl.³ B26B *27/00*
U.S. Cl. 30—296 R **8 Claims**

6. In combination, a portable cutter having:
(a) a cutting head mounted on one end of a rod,
and a pistol grip type control handle means on the other end of said rod,
and having a second handle means on said rod substantially midway between the control handle and cutting head,
(b) a back pack having
partial waist encircling support means with belt and a securing buckle,
a pair of spaced apart vertical standards secured to said encircling support having a transverse connector therebetween above said waist support,
a pair of shoulder strap connector means attached to each end of center of said transverse connector and connectable to said waist support,
back pack extension and guide means comprising a tubular

extension received and anchored in one of said vertical standards,
(c) elastomeric cutter suspension shock cord connected between said tubular extension and said cutter rod proximate the cutting head and being adjustable along said rod to permit adjustability for varying the weight of said cutter from an apparent zero to an amount desired by the operator thereby reducing operator fatigue to a minimum,
(d) a prime mover carried by said back pack above said waist encircling support means,
(e) motor means connected to drive said cutting head and being carried thereby,
(f) and selectively operable switch control means connected between said prime mover and motor means for selectively driving the motor means under control of said pistol grip control handle.

4,483,071

SAW GUIDE FOR A POWER-DRIVEN CIRCULAR HAND SAW MACHINE OR A JIG SAW MACHINE

Jan W. te Kolsté, Wassenaar, Netherlands, assignor to Wulfson Beheer BV, Wassenaar, Netherlands, a part interest

Filed Mar. 31, 1982, Ser. No. 363,762
Claims priority, application Netherlands, Apr. 2, 1981, 8101646
Int. Cl.³ B23D *47/02*
U.S. Cl. 30—376 **11 Claims**

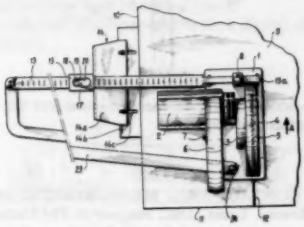
1. A saw guide for a power driven hand saw having a base plate providing a supporting surface for said saw as said saw moves along a member being cut, a saw blade extending through said base plate, a driving motor, and a handle with a motor switch, said saw guide comprising:
a bar member attachable along a first end portion thereof to said base plate extending laterally to the longitudinal axis

of said plate said bar member having a longitudinal linear scale along a top face thereof;

a sliding member movable on said bar member and provided with an upwardly opening window having at least one indicator for aligning said sliding member along said scale;

locking means on said sliding member for releasably locking said sliding member along said bar member;

cutting guide means secured with said sliding member for bearing against a panel being cut with said saw to guide said saw along a desired cut as said saw is moved along said panel;



and guide alignment compensating means connected with said bar member for adjusting the position and alignment of said cutting guide means relative to said saw blade for guiding said saw blade along a cutting line coincident with the plane of said saw blade; said compensating means including bracket means for adjustably securing said first end portion of said bar member with said base plate for adjusting the horizontal angle of said bar member relative to said base plate perpendicular to said saw blade.

4,483,072

MACHINE WITH LIQUID CRYSTAL DISPLAY

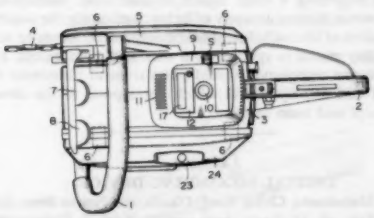
Akira Nagashima, Kawasaki, and Tadashige Kondo, Tokyo, both of Japan, assignors to Kioritz Corporation, Tokyo, Japan

Filed Sep. 28, 1982, Ser. No. 425,823

Claims priority, application Japan, Jul. 27, 1982, 57-112860

Int. Cl.³ B27B *17/00*

U.S. Cl. 30—381 **4 Claims**



1. A power-driven portable machine comprising

a driving assembly including

a prime mover;

a supporting assembly including

handles,

and a detachable cover mounted as part of said supporting assembly;

vibration damping members connecting said supporting assembly with said driving assembly;

said detachable cover including

a liquid crystal display device including

displays of working parameters,

an electronic circuit means to produce the aforementioned displays of working parameters electrically connected to said liquid crystal display device,

an independent power supply and power switch electrically connected to said electronic circuit means,

reset means to reset at least one of said displays of working parameters connected to said electronic circuit means,

antenna means to detect a working parameter information connected to transmit the working parameter information to said electronic circuit means for display on said liquid crystal display;

said liquid crystal display device, said electronic circuit means, said independent power supply and power switch, said reset means, and said antenna means all mounted in said detachable cover for separation with said detachable cover from the remaining part of said supporting assembly.

4,483,073

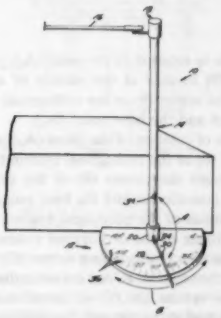
HI JUMP STEP SAVER STANDARD

David F. Johnston, P.O. Box 15377, Riyadh, Saudi Arabia

Filed Jul. 29, 1982, Ser. No. 402,925

Int. Cl.³ G01B *3/56*

U.S. Cl. 33—1 LE **7 Claims**



1. A hi-jump standard for allowing hi-jumpers to establish an approach path and starting point comprising a base, a vertical member secured to said base, means for releasably supporting an end of a cross bar, said base having an upper surface including means defining at least a predetermined portion of a circular scale with at least one end point of said predetermined portion being aligned with a line extending parallel to the cross bar support means and indicator means movably secured to said standard adjacent said base for being moved with respect to said scale for indicating a desired angle.

4,483,074

METHOD FOR LOCATING A POINT BY ITS COORDINATES AND A DEVICE FOR ACCOMPLISHING SAME

Juozas P. Rudzyanskas, and Galina J. Rudzyanskaite, both of Kaunas, U.S.S.R., assignors to Kaunassky Politekhnichesky Institut Imeni A. Snechkusa, Kaunas, U.S.S.R.

PCT No. PCT/SU80/00200, § 371 Date Aug. 13, 1982, § 102(e) Date Aug. 13, 1982, PCT Pub. No. WO82/02018, PCT Pub. Date Jun. 24, 1982

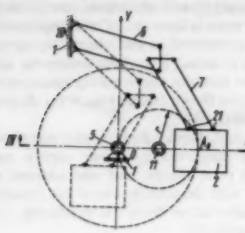
PCT Filed Dec. 18, 1980, Ser. No. 414,336

Int. Cl.³ G01B *5/03*

U.S. Cl. 33—1 M **21 Claims**

1. A method for locating point in space with preset coordinates in an orthogonal system comprising, selecting a base point (A_o) on one of the coordinate axes, moving the point along a conditional trajectory depending upon the coordinates of the preset base point, the positioning of the base point (A_o)

being performed using polar coordinates alone, and (α) of said coordinates being determined from the formula



$$\alpha = 2 \arccos \frac{\sqrt{x^2 + y^2}}{2r}$$

and another coordinate (β) -determined from the formula

$$\beta = \arccos \frac{\sqrt{x^2 + y^2}}{2r} + \arctan \frac{x}{y},$$

where

α- is an angle or rotation of the point (A_o) positioned around a center (0) located at the middle of a segment (OA_o) between the center (0) or the orthogonal system (XOY) of coordinates and the base point (A_o);

β- is an angle of rotation of the point (A_o) positioned around the center (0) of the orthogonal system (XOY) of coordinates between the center (0) of the orthogonal system (XOY) of coordinates and the base point (A_o);

x - is the abscissa of the othogonal system of coordinates;

y - is the ordinate of the orthogonal system of coordinates;

r - is a radius of a circle whose center (0) is located at the middle of the segment (OA_o) between the center (0) of the orthogonal system (XOY) of coordinates and the base point (A_o), and in the course of positioning, the base point (A_o) is moved in accordance with said angles (α and β) relative to, respectively, the point (0) located at the middle of the segment (OA_o) between the center (0) of the orthogonal system (XOY) of coordinates and the base point (A_o), and the center (0) of the othogonal system (XOY) of coordinates.

4,483,075

APPARATUS AND METHOD FOR MEASURING DEFORMED AREAS OF SKIN SURFACE

Jane I. Kundin, 1288 Laurel Hill Dr., San Mateo, Calif. 94402

Continuation-in-part of Ser. No. 343,890, Jan. 29, 1982, abandoned. This application Jun. 10, 1983, Ser. No. 503,067

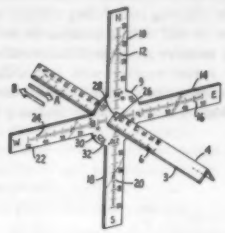
Int. Cl.³ G01B *1/28, 3/14, 5/18*

U.S. Cl. 33—121 **14 Claims**

1. An apparatus for measuring a portion of skin surface comprising:

a first elongated member having incremental markings thereon;

a second member having four flat, flexible, radially-extending arms, each having incremental markings thereon with adjacent arms being disposed at an angle of substantially 90 degrees from one another and with all of said arms extending from a circular center portion having degree markings thereon, and wherein said first member engages said second member with said first member being disposed substantially perpendicular to said second member, such that the first member measures the depth of said surface



portion and said second member measures the area of same surface portion.

4,483,076

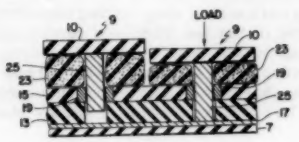
GROUND CONTACT AREA MEASUREMENT DEVICE

Wahner E. Brooks, Yuma, Ariz., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 30, 1982, Ser. No. 445,405

Int. Cl.³ G01B *7/32*

U.S. Cl. 33—123 **6 Claims**



1. An area measurement and display device comprising a main matrix of switches arranged in rows and columns and adapted to be driven over by a vehicle to be tested, means to systematically scan said main matrix to produce a pulse train having one pulse therein for each of said switches which is closed by the load of said vehicle, means to apply said pulse train to a pulse counter which is calibrated to indicate the area of contact of said vehicle with said main matrix, a display matrix comprising a scale model of said main matrix, said display matrix having an array of lights duplicating the number and location of the switches of said main matrix, means to scan said display matrix in synchronism with said main matrix, and circuit means responsive to said pulse train to illuminate the lights of said display matrix which correspond to the closed switches of said main matrix.

4,483,077

DIGITAL MEASURING DEVICE

Hajime Matsumoto, Chiba; Kouji Okada, and Nobuo Sano, both of Tokyo, all of Japan, assignors to Toybox Corporation, Tokyo, Japan

Filed Jun. 16, 1983, Ser. No. 504,868

Claims priority, application Japan, Jun. 17, 1982, 57-11440; Jun. 17, 1982, 57-11441

Int. Cl.³ G01B *11/04, 11/08*

U.S. Cl. 33—125 A **7 Claims**

1. A device for measuring an object, comprising:

(a) a slide having:

(i) a light receiving panel,

(ii) a digital read-out panel with a digital configuration therein,

(iii) a plurality of optic fibers extending from the light receiving panel to the digital read-out panel, and

(iv) an opening formed in the slide; and

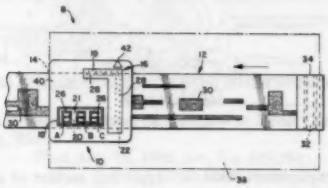
(b) an elongated substantially transparent band with opaque indica located thereon positioned in the opening, the opaque indicia corresponding to predetermined measured lengths of the band, wherein when the band is passed through the opening in the slide and across the light receiving panel, the opaque indicia mask some of the light while other light passes through the transparent area of the band and into certain of the plurality of optic fibers to selectively light the digital configuration at the digital read-out panel.

4. A digital waist measuring device, comprising:

(a) a buckle having:

(i) an ambient light receiving panel,

(ii) a digital read-out panel with a digital configuration therein,



(iii) a plurality of optic fibers each having a first end and a second end, the first end being connected to the light receiving panel and the second end being connected to the digital read-out panel, and

(iv) a continuous opening formed in the buckle; and

(b) an elongated substantially transparent belt with opaque indicia located thereon positioned in the opening, the opaque indicia corresponding to predetermined measured lengths of the belt, wherein when the belt is passed through the opening and across the light receiving panel the opaque indicia mask some of the ambient light while other ambient light passes through the transparent area of the belt and into certain of the plurality of optic fibers to selectively light the digital configuration at the digital read-out panel.

4,483,078

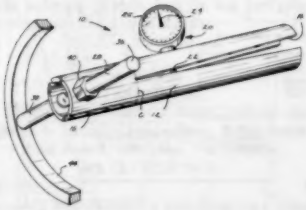
INNER DIAMETER AND BORE GAUGE

Kenneth V. Stevens, Coffeyville, Kans., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Sep. 15, 1982, Ser. No. 418,445

Int. Cl.³ G01B 5/12

U.S. Cl. 33—148 R **20 Claims**



1. An apparatus for measuring the diameter of a bore comprising:

an elongated cylindrical tube, said tube having a first slot means formed in one end thereof for defining first opposed sides and a second slot means formed in the other end thereof for defining second opposed sides, said second slot means being oriented with respect to said first slot means such that opening and closing movement of said first opposed sides causes respective opening and closing movement of said second opposed sides;

indicator means connected to said tube for measuring the distance between said first opposed sides; and

extension means secured to said second opposed sides for contacting the inside wall of the bore to be measured.

4,483,079

COORDINATE MEASURING APPARATUS

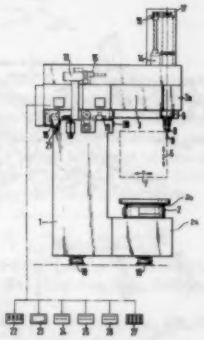
Gerhard Band, Oberndorf; Hans-Jurgen Nösges, Rottweil, and Günther Ross, Oberndorf, all of Fed. Rep. of Germany, assignors to Mauser-Werke Oberndorf GmbH, Fed. Rep. of Germany

Filed Dec. 9, 1982, Ser. No. 448,337

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1981, 8136664

Int. Cl.³ G01B 5/03, 7/03

U.S. Cl. 33—174 L **11 Claims**



1. A coordinate measuring apparatus comprising a frame, a workpiece receiving device, and a measuring head which is movable parallel to an x, y and z axis of a coordinate system and is equipped with measuring pins, the frame being formed by a substantially rectangular prismatic body (1) having front side (1*a*), the workpiece receiving device comprising an indexing rotary table (2) connected to the front side giving the frame an L-shape, a cantilever arm (3) spaced from and projecting above the rotary table and extending from a top (1*b*) of the prismatic body (1) at right angles to the front side (1*a*) thereof and mounted for travel on the prismatic body (1) in the direction of the coordinate x-axis and transversely to a longitudinal axis of the arm, the arm carrying on a free front end (3*a*) thereof a tail spindle which is movable in the vertical z-axis direction and in the y-axis direction of the coordinate system and is equipped with the measuring head.

4,483,080

ALIGNMENT DETECTION SYSTEM

Frederick A. Knoll, Central Islip, N.Y., assignor to TEK Precision Co., Ltd., Deer Park, N.Y.

Filed Mar. 25, 1982, Ser. No. 361,835

Int. Cl.³ G01C 15/00

U.S. Cl. 33—286 **18 Claims**

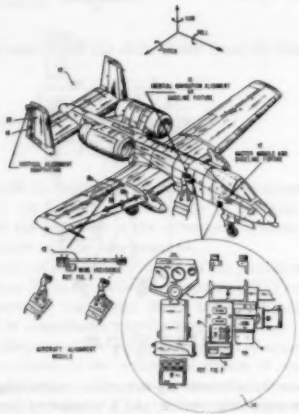
1. Apparatus for detecting the orientation of a remote portion of a structure relative to a reference portion comprising:

reference track means adapted to be secured to said reference portion;

reference orientation detection means adapted to be slidably secured to said reference track means wherein said reference orientation detection means are adapted to be secured to said reference track means by reference bracket means, said remote orientation detection means are adapted to be secured to said remote track means by

remote bracket means, wherein said reference and remote bracket means are substantially identical and each comprise first and second fixtures adapted to selectively receive portions of said reference or remote orientation detection means, said first and second fixtures on said reference bracket means being orthogonally disposed and said first and second fixtures on said remote bracket means being orthogonally disposed said reference orientation detection means comprising a first unit for detecting the vertical orientation of said reference portion and a second unit for detecting the azimuthal orientation of said reference portion, said first unit adapted to be mounted on said reference bracket means at said first fixture and said second unit adapted to be mounted on said reference bracket means at said second fixture;

remote tack means adapted to be positioned at said remote portion;



remote orientation detection means adapted to be slidably secured to said remote track means wherein said remote orientation detection means comprise a first unit for detecting the vertical orientation of said remote portion and a second unit for detecting the azimuthal orientation of said remote portion, said first unit adapted to be mounted on said remote bracket means at said first fixture and said second unit adapted to be mounted on said remote bracket means at said second fixture; and

indication means for receiving signals from said reference and remote orientation detection means wherein said reference track means and said remote track means are of substantially identical configuration, whereby said reference and remote orientation detection means are interchangeable on said reference and remote track means.

4,483,081

HEAD SUPPORTING DEVICE FOR UNIVERSAL PARALLEL RULER

Takashi Komine, Saitama, Japan, assignor to Asahi Seimitsu Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 13, 1982, Ser. No. 433,996

Claims priority, application Japan, Oct. 20, 1981, 56-155810[U]

Int. Cl.³ B43L *13/02*

U.S. Cl. 33—438 **6 Claims**

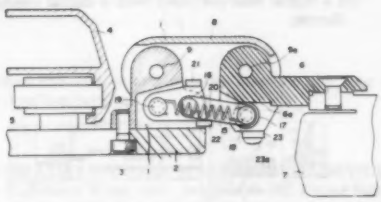
1. A head supporting device for moving a universal parallel ruler containing a head assembly and a scale in a vertical direction in planes substantially parallel to that of a drawing board which comprises

a cursor-side link member,

a head supporting link member for supporting said heat assembly and scale,

a parallel motion mechanism mounting said head supporting link member on said cursor-side link member for moving said head assembly and scale away from and into contact with the surface of the drawing board while said supporting link member is maintained parallel to the surface of the drawing board,

a support lever disposed between said cursor-side link member and said head supporting link member, one end portion of said support lever being pivotally attached to said cursor-side link member and the other end portion thereof



in engagement with the supporting surface of said head supporting link member, thereby lifting the head supporting link member upwardly relative to said cursor-side link member and

a spring member attached to said cursor-side link member and said support lever for raising the head supporting link member relative to the cursor-side link member, said spring member acting upon the support lever to raise the head supporting link member when the pivot point of the support lever on said cursor-side link member falls below a straight line connecting the attachment points of the spring member to each of said cursor-side link member and said support lever.

4,483,082

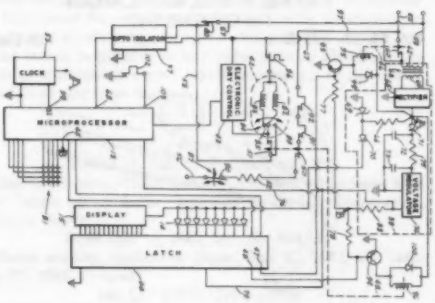
SINGLE RELAY FOR MOTOR AND HEATER CONTROL

David I. Ellingson, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

Filed Apr. 12, 1982, Ser. No. 367,426

Int. Cl.³ F26B *21/10*

U.S. Cl. 34—44 **10 Claims**



1. A microprocessor-based control for a fabric drying apparatus having structure including a rotatable fabric tumbler, a drive motor for driving the rotatable fabric tumbler, and means for heating to effect drying in said tumbler, the combination comprising: control means including a microprocessor for

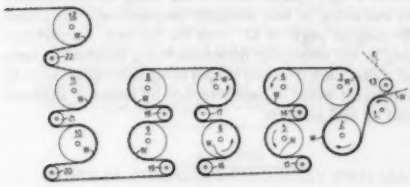
controlling operation of said fabric drying apparatus; first circuit means for controlling said drive motor including a first relay switch and a centrifugal switch, said first circuit means being operable for initiating energization of said drive motor in a first posture of said centrifugal switch and for maintaining energization of said drive motor in a second posture thereof independent of said first relay switch; second circuit means for energizing said means for heating including a second relay switch; and interfacing circuitry for electrically interfacing said microprocessor with said drive motor and said means for heating including a single relay coil for generally concurrently operating said first and second relay switches under control of said microprocessor, said first circuit means further including means for maintaining energization of the drive motor during periods of deenergization of said single relay coil whereby said microprocessor is operable for controlling the operation of said means for heating without interrupting operation of the drive motor.

4,483,083

DRYING AND RUNNABILITY FOR HIGH SPEED PAPER MACHINES

James L. Chance, Rockton, Ill., assignor to Beloit Corporation, Beloit, Wis.

Filed Aug. 18, 1982, Ser. No. 409,154
Int. Cl.³ F26B *13/08*
U.S. Cl. 34—113 **12 Claims**



1. A dryer section for drying a traveling fibrous web such as in a papermaking machine, comprising in combination:
- a first small diameter heated dryer roll receiving a web wrapping its surface in direct contact therewith for conditioning the web;
- a second internally heated imperforate dryer roll of larger diameter;
- a felt for passing through the dryer section receiving the web from said first roll and wrapping the second roll with the web on the outer surface of the felt for gradually heating the moisture in the web with heat of the second roll being transferred through the felt to the web;
- and a plurality of succeeding dryer rolls receiving the felt and web for further drying with the web in direct contact with the succeeding rolls, and the felt carrying the web between rolls with no open draws.

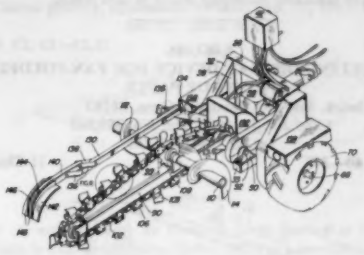
4,483,084

TRENCHER

Robert H. Caldwell, and Randy J. Scott, both of Jacksonville, Ill., assignors to Grizzly Corporations, Jacksonville, Ill.

Filed Jun. 9, 1982, Ser. No. 386,694
Int. Cl.³ E02F *5/06*
U.S. Cl. 37—86 **10 Claims**

1. A trenching attachment for mounting on a wheeled tractor having an engine, a power take-off and a hydraulic system which are both driven by the engine, and a three-point hitch, said attachment comprising a frame with two spaced wheels, connecting means on the attachment for readily connecting and disconnecting the attachment to the three-point hitch, power take-off, and hydraulic system of any standard tractor, means on the attachment connected to the power take-off of the tractor for limiting torque when the attachment encounters an obstacle or overload conditions, a boom pivotally mounted on the frame which supports an endless digging chain mounted thereon, the chain having blades and being driven by the power take-off of the tractor to which it is mechanically connected, hydraulic control means connected to and obtaining its power from the hydraulic system of the tractor through tractor connecting hydraulic output lines, first hydraulic drive means hydraulically connected to the hydraulic control means and



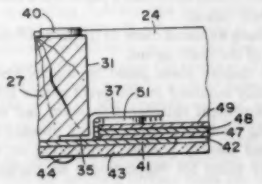
mechanically connected to the trencher wheels for providing the sole power for the rate of forward ground advancement for both the tractor and trenching attachment independently of tractor engine speed, and second hydraulic drive means connected hydraulically to the hydraulic control means and mechanically connected at its output to the boom for independently controlling the elevation of the boom.

4,483,085

PHOTOGRAPH DISPLAY AND STORAGE DEVICE

Robert J. Barton, 11845 West Ave., Apt. 203, San Antonio, Tex. 78216

Filed Dec. 7, 1983, Ser. No. 559,103
Int. Cl.³ A47G *1/06*
U.S. Cl. 40—156 **3 Claims**



1. A photograph display and storage device comprising
an essentially square frame consisting of vertically extending top, bottom and opposing sides,
- a vertically extending post in each interior corner of said frame, each such post terminating upwardly at least slightly below the horizontal plane of the upper edge of said frame and terminating downwardly at least slightly above the horizontal plane of the lower edge of said frame,
- a plurality of first pads, one of which is secured to the bottom of each post,
- a strap consisting of a plurality of flexible, resilient hooks for detachable engagement with said first pads, each said strap secured at one end to the top of each post and in one position adapted to engage the corresponding pad on the bottom thereof,
- an overlay mat in said frame and bearing against the top of each said post,
- a cut-out in said mat,
- a transparent cover overlying said mat and secured to said frame,

at least one mounting board adapted to receive a photograph mounted thereon,

a back plate adapted to insert within said frame,

a plurality of second pads, one of said second pads secured in each interior angle on the outer surface of said back plate,

each said strap in a second position adapted to engage the corresponding second pad on said back plate and maintain said at least one mounting board in said frame.

4,483,086

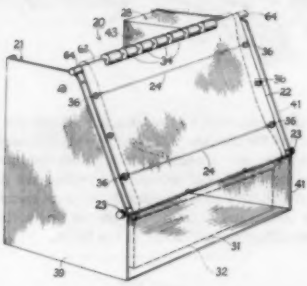
SCROLLING DISPLAY DEVICE FOR FAN-FOLDED PRINTOUT PAPER

Stuart Abseck, Box 186, Roxbury, Conn. 06783

Filed Jul. 12, 1982, Ser. No. 397,107

Int. Cl.³ B41J *11/38*

U.S. Cl. 40—345 **11 Claims**



1. A display device for a fan-folded indicia-bearing web of paper or like material comprising

a paper stack storage housing incorporating two upstanding sides surmounting a supporting base means,

paper stack-supporting shelf means spanning the space between the two upstanding sides, spaced above the supporting base means to overlie a paper stack storage bin beneath the shelf means,

pivot means mounted close to the front of each side near the level of the shelf means,

an easel display plane panel having its lower end portion pivotally mounted on the pivot means for angular pivoting movement between a forward and downwardly extending loading position and an upward and rearwardly inclined display position presenting an elongated easel display plane for supporting a substantial length of the web,

idler roller means rotatably mounted on a transverse axis near the upper distal end of the panel,

pinch roll means rotatably mounted on and protruding behind the panel near the idler roller means,

and driven capstan roller means rotatably mounted spanning the space between the two sides, and presented for tractive engagement with the pinch roll means when the panel is in its upward and rearwardly inclined display position,

whereby a stack of fan-folded paper positioned in the storage bin beneath the shelf means may have its topmost fan fold drawn forward and upward in front of the elongated easel display plane panel, thus displaying a substantial length of the web unobscured by any support members, and thence rearward over the idler roller means into sandwiched tractive engagement between the pinch roll means and the driven capstan roller means, to be delivered onto the top surface of the shelf means in a re-fan-folded stack by operation of the capstan roller means, while the paper web remains readily releasable for quick indexing selection of different web portions for display by pivoting the display plane panel to its loading position, avoiding any need for unthreading or unsprocketing of the web.

4,483,087

DISPLAY WITH CHANGEABLE IMAGE AND METHOD OF ITS PRODUCTION

Boris P. Stoyanov, Sofia, Bulgaria, assignor to Glavna Directsia pri Tvorcheski Fond na Sayuza na Bulgarskite Hudojnitsi (SBH), Sofia, Bulgaria

Filed Jan. 6, 1982, Ser. No. 337,445

Int. Cl.³ G09F *19/14, 19/12*

U.S. Cl. 40—453 **3 Claims**

1. A device displaying a changeable image, said device comprising a screen having a viewing plane with components forming images mounted thereon, the components being platelets made of a rigid opaque material and being fixedly attached in rows extending in two mutually perpendicular directions each forming an angle of 45° with the horizon, the platelets extending in the respective directions being different in both size and shape, such sizes and shapes being determined so as to form a different image in each direction by means of shadows projected by said platelets.

4,483,088

REVOLVER EMPTY CHAMBER INDICIA

Dennis M. Tussing, 1016 S. Siesta La., Tempe, Ariz. 85281

Filed Jan. 31, 1983, Ser. No. 462,231

Int. Cl.³ F41C *27/12*

U.S. Cl. 42—1 D **4 Claims**

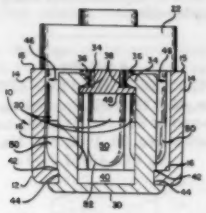
1. A safety indicator for use with a revolver having a firing hammer, a barrel and a revolving chamber cylinder, comprising indicia means for statically indicating a predetermined empty chamber in the revolving cylinder and for aligning the predetermined empty chamber with the hammer and the barrel, said indicia means being visibly located on an external surface area of the revolving cylinder corresponding to the predetermined empty chamber and including parallel markings on the external surface area of the revolving cylinder corresponding to the predetermined empty chamber, the parallel markings being separated by a distance which enables the markings to be visible when the predetermined empty chamber is aligned with the firing hammer and chamber.

4,483,089

HOLDER FOR PISTOL LOADER AND CARTRIDGES

David A. Johnson, Klamath Falls, Oreg., assignor to J.F.S., Inc., Salem, Oreg.

Filed Jul. 19, 1982, Ser. No. 399,205
Int. Cl.³ F42B 39/04
U.S. Cl. 42—89 11 Claims



1. A protective holder for use in carrying a pistol reloader and any cartridges contained therein in readiness for loading the cartridges into a cylinder of a revolver, the holder comprising:

(a) a generally cup-like protective shell including a generally cylindrical wall and a bottom connected to said wall adjacent an end thereof; and

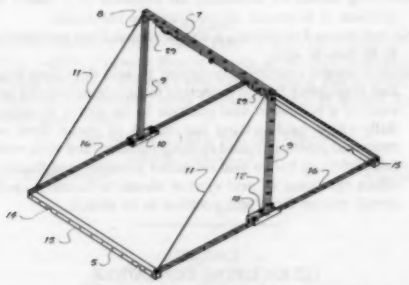
(b) resilient retainer means extending within said protective shell from said bottom, for releasably engaging said reloader and holding said reloader mated with said holder, with said cartridges protectively housed in said reloader and said protective shell, yet permitting removal of said reloader and cartridges upwardly from said holder.

4,483,090

GENERAL PURPOSE BREAKAWAY TWO MAN HUNTING BLIND

Jackie D. Carper, 320 N. Georgia Ave., Pooler, Ga. 31322

Filed Mar. 1, 1983, Ser. No. 437,498
Int. Cl.³ A01M 31/00
U.S. Cl. 43—1 2 Claims



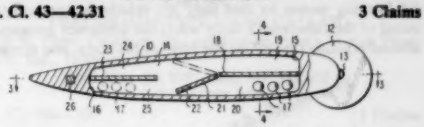
1. A general purpose breakaway hunting blind, comprising, a rectangular base, said blind having two identical halves forming a frontal half and a rearward half, each of said halves being pivotally secured to the rectangular base about a separate transverse axis, each said axis lying parallel to the other and extending transversally of the base at a location substantially of equal distance from longitudinal ends of the base, respectively; resilient means oppositely biasing each of said halves to pivot about its respective axis to a breakaway position in which each half lies along the rectangular base; latching and releasing means secured to one of said halves, said latching and releasing means having locking means for holding said halves in a closed vertical position; actuating means for releasing said latching and releasing means, whereby the halves are moved by the resilient means to the breakaway position.

4,483,091

WOBBLER

Lars G. G. Norlin, Bergslagsgränd 3, S-79400 Orsa, Sweden

Filed Jan. 25, 1983, Ser. No. 460,904
Claims priority, application Sweden, Feb. 17, 1982, 8200975
Int. Cl.³ A01K 85/00
U.S. Cl. 43—42.31 3 Claims



1. A wobbler with an elongate body having at least one obliquely disposed steering surface such as a spoon for steering the wobbler to desired depths and which is balanced such that the wobbler in a free attitude in the water assumes an upwardly sloping attitude, whereas when the casting line is pulled it will tip forwards and be urged by the steering surface into a downwardly sloping attitude, the body having a cavity containing at least one weight ball intended to assume different lateral positions in the cavity for changing the position of the center of gravity in the wobbler and thereby the angular turning attitude of the wobbler and its steering surface in the water, so that the wobbler changes its direction of movement in the water, characterized in that the body is made with said cavity extending longitudinally of the body; one end portion of the cavity being divided into two side chambers with the aid of a longitudinal partition wall; said wall is extended at one end with a weight-loaded flap which in response to the angular turning attitude of the body is able to fall to one side or the other into one of two end positions where the flap is obliquely directed and closes off the respective side chamber; at least one weight ball is arranged in the cavity and able to roll backwards and forwards in response to the backwards or forwards sloping attitude of the wobbler, in one rolling direction the ball rolling along one side of the cavity and under the flap for raising it, whereas in the opposite direction the ball rolls up over the flap and to the other side of the cavity for changing the position of the center of gravity; the partition wall being in a plane substantially at right angles to the plane of the steering surface, so that the center of gravity of the wobbler is displaced towards one or the other side of the cavity relative to the steering surface when the ball is in one or the other side chamber, for twisting the wobbler so that the steering surface pulls the wobbler in one or the other transverse direction when there is a pull on the line.

4,483,092

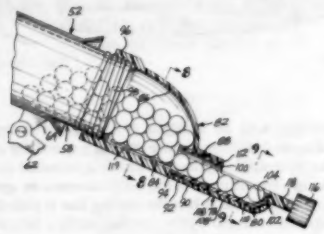
BAIT STORAGE APPARATUS AND TECHNIQUE FOR FISHERMEN

John Steiner, 44314-216th Ave., SE., Enumclaw, Wash. 98022

Filed Aug. 19, 1982, Ser. No. 409,587
Int. Cl.³ A01K 97/04
U.S. Cl. 43—55 21 Claims

1. Apparatus whereby a fisherman can store a batch of salmon eggs or the like on his body, and when he needs one, isolate it from the batch and pluck it out of storage on the hook of his line, or between the thumb and one finger of his free hand, comprising means for forming a support on the fisherman's body opposite the front thereof, a device which is adaptable to form an open ended container for the eggs and pivotally mountable on the support adjacent the front of the fisherman's body to swing between a first position in which the eggs are retained in the container against discharge through the open end of the same gravity, and a second position in which one or more eggs tend to discharge through the open end of the

container by gravity, means for forming a lid on the open end of the container, said lid forming means having an elongated trough-like recess formed therein for receiving eggs discharged from the open end of the container, and means thereon for causing the eggs to collimate in the recess lengthwise thereof when the container is swung between the first and second positions thereof, respectively, there being an opening in the lid forming means opposite the recess for access to the same, and said recess and access opening being formed on the lid forming means so that they are relatively upwardly oriented of the fisherman's body when the container assumes the second position thereof on the front of his body, and means on



the lid forming means which are operable to cover the access opening when the container is disposed in the second position thereof, but which are shiftable in relation to the access opening to uncover the same to the ambient surroundings of the container when desired, said lid forming means being adapted so that when eggs are received in the recess and exposed upwardly of the fisherman's body through the uncovered access opening thereof in the second position of the container, the fisherman can insert the tip of the thumb or one finger of his free hand through the access opening and into the recess to engage an egg in such a way as to enable him to pluck the egg from the recess and thus from the apparatus, between the thumb and one finger of his free hand.

4,483,093

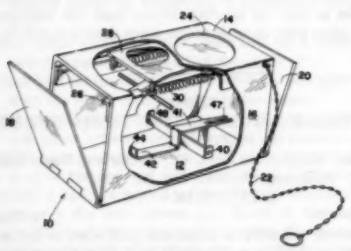
RESTRICTED ANIMAL TRAP

Jack E. Isborn, P.O. Box 327, Talmage, Calif. 95481

Filed Dec. 27, 1982, Ser. No. 453,144

Int. Cl.³ A01M *23/00*

U.S. Cl. 43—58 **5 Claims**



1. An animal trap comprising:

a housing including a top panel;

means forming an opening in said top panel of a size to receive closely the paw of a small animal;

a slide plate mounted in said housing for movement along the undersurface of said top panel between a set and sprung position, respectively displaced from and underlying said opening;

strong spring means biasing said slide plate into said sprung position;

a trigger arm in said housing pivoted between the ends thereof about a horizontal axis;

bait attaching means at one end of said trigger arm beneath said opening;

first latch means at the other end of said trigger arm; and

complementary latch means carried on said slide plate;

said first latch means being engagable when said one end of the trigger arm is depressed and being disengaged when said one end is raised.

4,483,094

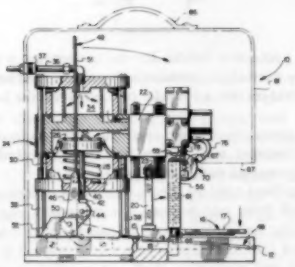
RODENT EXTERMINATING APPARATUS

James E. McKee, 4336 Overhill Dr., Dallas, Tex. 75205

Continuation-in-part of Ser. No. 179,168, Aug. 18, 1980,. This application Aug. 30, 1982, Ser. No. 412,831

Int. Cl.³ A01M *23/14*

U.S. Cl. 43—81 **14 Claims**



1. A pressure fluid actuated apparatus for exterminating rodents and the like comprising:

a frame;

striking bar means movably mounted on said frame and operable to move from a retracted position to a position forcibly striking a rodent or the like;

a pressure fluid actuator operably connected to said striking bar means for moving said striking bar means between said retracted position and said striking position;

detecting means for detecting the presence of a rodent in a position to be struck by said striking bar means;

ejector means for ejecting a struck rodent from said position to be struck; and

control means operably connected to said detecting means and responsive to said detecting means detecting the presence of a rodent in said position to be struck to sequentially cause said striking bar means to move from said retracted position to said striking position, and then return said stricking bar to said retracted position, and finally to effect operation of said ejector means to forcibly eject a struck rodent from said position to be struck.

4,483,095

TELESCOPING CONTAINER

George P. Webinger, Robbinsdale, Minn., assignor to Champion International Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 529,922, Sep. 6, 1983, abandoned, which is a continuation of Ser. No. 321,018, Nov. 13, 1981, abandoned. This application Apr. 6, 1984, Ser. No. 597,649

Int. Cl.³ A01M *1/20;* **A61L** *9/04;* **B65D** *5/32*

U.S. Cl. 43—131 **13 Claims**

1. A telescoping container comprising two sections, each of the sections having a transverse wall, a pair of side walls and a pair of end walls normal to the transverse wall and an open end at the end opposite the transverse wall,

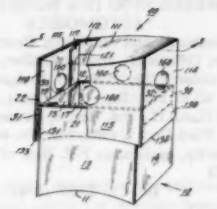
one of said container sections having a dimension such that it may be slid over and receive the other section;

the two sections being telescopically arranged with respect to each other with the open end of one section receiving

the open end of the other section and the transverse walls being on the outside and parallel to each other so that said sections may be telescoped one within the other from a maximum dimension wherein said transverse walls are farthest from each other to a minimum dimension wherein said transverse walls are closest to each other;

a pair of flaps at the edges of the end walls of the section which is received within the other section bent back into surface-to-surface relation with the outer surface of said end walls;

a pair of flaps on the edges of the corresponding end walls of the outer section being bent inwardly to surface-to-surface relation with the inner suface of said end walls; said sections, when telescoping together, being so arranged that



said flaps may interengage when the sections are pulled apart to their maximum dimension; the interengagement of said flaps when the telescoping sections are pulled apart preventing the outer section from being withdrawn from the inner section, and

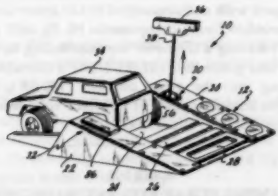
at least said side walls being connected to each of the transverse walls of each of the container sections by convexly curved fold lines; said curved fold lines causing at least said side walls to curve outwardly to provide a container section which is at least in part cylindrical in shape; said two container sections forming said telescoping container being similarly curved; said curved fold lines further causing said transverse wall in each of said container sections to curve concavely thereby facilitating the interengagement of said flaps.

4,483,096

LAUNCHING PLATFORM FOR INERTIA VEHICLE

Otto L. Gabler, Redondo Beach; Wayne R. Halford, Manhattan Beach; Eugene J. Kilroy, Palos Verdes Estate, and Michael T. McKittrick, Torrance, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Mar. 17, 1983, Ser. No. 476,006
Int. Cl.³ A63H *29/20*
U.S. Cl. 446—430 **5 Claims**



1. An inertia motor toy vehicle energizer and launching means comprising:

a housing having a platform adapted to hold said vehicle, two opposed hollow sides upstanding from said platform and a holding area adjacent said platform formed in said housing between said sides;

means for energizing an inertia vehicle held within said housing in one of said hollow sides including a draw string and adapted to be connected to a drive wheel of said toy vehicle held over said platform between said sides for energization thereof; and

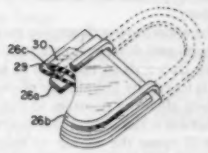
retaining and release means held within said housing in the other of said hollow sides to retain said toy vehicle in a position to be energized and to release said vehicle after energization.

4,483,097

DIAPHRAGM-TYPE GAME CALLER

Frank R. Piper, Delmont, Pa., assignor to Penn's Woods Products, Inc., Delmont, Pa.

Filed May 19, 1982, Ser. No. 379,621
Int. Cl.³ A63H *5/00*
U.S. Cl. 446—207 **3 Claims**



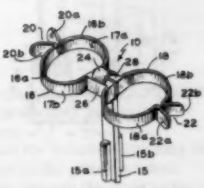
1. A game caller having a size and wafer-like shape suitable for support against the roof of a user's mouth while caused to vibrate by impingement with exhausted pulmonary air to simulate sounds normally made by wild game, said caller including two diaphragms, means extending about substantially coextensive peripheral segments of each diaphragm for retaining them together as a unit in spaced-apart relation and presenting an exposed edge portion of each diaphragm concurrently to vibrate when impinged by exhausted pulmonary air of the user, said means including a frame having a window, said frame being bent over to form first and second frame half portions, the first frame half portion being divided into inner and outer frame segments, one of said diaphragms being supported between said second frame half portion and one of said frame segments and the other of said diaphragms being supported between said inner and outer frame segments, and a fastener to hold said frame and said diaphragms together.

4,483,098

PLANT STAKE AND CLASP

Dennis C. Anderson, Northfield, Minn., assignor to National Polymers Inc., Lakeville, Minn.

Filed Sep. 28, 1982, Ser. No. 425,972
Int. Cl.³ A01G *17/06*
U.S. Cl. 47—47 **5 Claims**



1. A combination plant stake and clasp injected molded from a single piece of plastic resinous material comprising,

an elongated vertically disposed plant stake having a longitudinal axis,

a clasp at the top end of the stake including a pair of resilient arms of arcuate shape,

said arms being laid out in a flat configuration such that the

arms are spaced longitudinally with respect to one another along the longitudinal axis of the stake,

each of the arms has a connected end and the connected ends of the arms are each integral with a support body,

one of said support bodies is integral with the top end of the stake, a flexible strap integral with the support bodies and connecting them together, said clasp being foldable to an operating position by bending the strap,

a connector means is provided for securing the supporting bodies to one another whereby, with the stake oriented in a vertical position, one of the bodies can be brought downwardly by bending the strap and said bodies secured to one another by said connector means to place said arms in left and right bilaterally opposed cooperating relationship having free ends adjacent to one another to form a clasp of circular configuration,

said clasp having flat inner surfaces, the flat inner surfaces of the clasp thereby retaining the stems of the plants in place without injury,

the ends of the arms having diverging ears defining a mouth between them, said divergent ears serving as cam surfaces to cause the free ends of the arms to spread apart as the plant stem is forced by light finger pressure into the mouth between them allowing the stem to pass into the center of the clasp between the arms whereupon the resiliency of the arms will cause the mouth to snap shut around the stem, holding it in place within the clasp,

whereby molding of the entire article is facilitated by positioning the arms apart from one another in a flat configuration to permit separation of a simple plastic injection mold allowing the entire article to be removed from the mold.

4,483,099

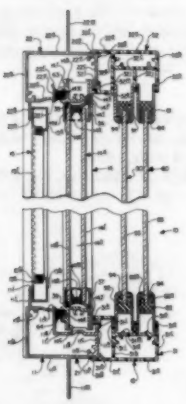
WINDOW ASSEMBLY

Dietrich F. Schmidt, Camp Hill, Pa., assignor to Capitol Products Corporation, Mechanicsburg, Pa.

Continuation of Ser. No. 338,910, Jan. 12, 1982, , which is a continuation of Ser. No. 113,639, Jan. 21, 1980,. This application Apr. 6, 1984, Ser. No. 597,691

Int. Cl.³ E05B *65/04*

U.S. Cl. 49—63 **19 Claims**



1. A basic metal window assembly complete in and of itself and so constructed as to receive without alteration of the assembly an interior snap-on plastic window, said metal window assembly comprising a basic or outer metal frame to be installed in a rough opening in an enclosing wall, said basic metal frame including a metal sill, a metal head and a pair of metal jambs; attachment means on each of said sill, said head and said jambs for enabling the metal frame to be attached to the enclosing wall; an exterior and interior spaced apart track means in each of said sill, head and jambs for receiving a panel in each of said track means; each of said track means being so constructed as to be able to receive panels of various thicknesses without alteration of the track means; a panel in each of said track means in a lapping relationship; at least one of said panels being horizontally movable; and substantially unobtrusive flange means on each of said sill, head and jambs for receiving attaching means of a plastic frame of said interior snap-on plastic window on the interior side thereof, said flange means being substantially the same plane as said panels in said window assembly.

4,483,100

PANE GUIDE FOR A SLIDING WINDOW CAPABLE OF BEING LOWERED INTO THE WINDOW SHAFT OF AN AUTOMOBILE

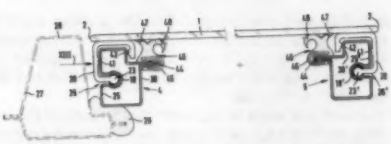
Heinz Blankenburg, Bad Homburg; Peter Schäfer, Maintal; Fritz Marr, Offenbach; Harald Köllner, Altenstadt; Rainer Grimm, Wetzlar; Wilhelm Scherf, Rodgau, and Horst Böhm, Frankfurt, all of Fed. Rep. of Germany, assignors to Rockwell-Golde G.m.b.H., Fed. Rep. of Germany

Filed Dec. 1, 1982, Ser. No. 445,789

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1981, 3149073

Int. Cl.³ E05F *11/48*

U.S. Cl. 49—352 **19 Claims**



1. In a pane guide for a sliding window capable of being lowered into the window shaft of an automobile, the windowpane of which is slidably guided at both lateral edges on lateral windowframe components extending into the window shaft and is connected with the actuating element of a window winder which is formed as flexible threaded cable guided in tension-resistant and pressure-resistant manner displaceably in a guide tube, which cable engages with the drive pinion of a stationary mounted drive apparatus, the improvement comprising: a back-cut guide channel (**18**, **18'**) of circular cross-section at each window frame component (**4**, **5**), each said guide channel extending in the longitudinal direction of its respective window frame component and having a slit (**26**, **26'**) extending over its entire length, slide elements (**23**, **23'**) displaceably guided in said guide channels and connected with carrier elements (**19**, **22**) fixed to the inner surface of the windowpane (**1**), said slits (**26**, **26'**) permitting movement of said carrier elements (**19**, **22**) with said slide elements (**23**, **23'**), a guide tube (**11**, **11'**) aligned with and connected to the lower end of at least one of the windowframe components (**4**, **5**), said guide channels (**18**, **18'**) having a diameter corresponding to the internal diameter of said guide tube (**11**, **11'**), and a threaded cable (**12**, **12'**) extending into the guide channel (**18**, **18'**), at said one window frame component (**4**, **5**) and fixed to at least one of the slide elements (**23**, **23'**) situated therein.

4,483,101

RETAINING STRAP FOR PRE-HUNG DOORS

James A. Berzina, Grand Island, Nebr., assignor to Spelts-Schultz Lumber Co., Grand Island, Nebr.

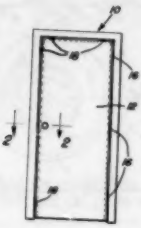
Filed Nov. 15, 1982, Ser. No. 441,775

Int. Cl.³ E06B *1/00*

U.S. Cl. 49—380 **10 Claims**

1. A pre-hung door assembly including a door frame and a door hingedly supported from said frame and including a free swinging edge opposing a corresponding marginal portion of said frame, said door having a lock body bore formed therein

adjacent said free swinging edge and opening outwardly of at least one side face of said door and also a lock bolt bore formed therein opening through the free swinging edge of the door at one end and into the lock body bore at the other end, a retaining strap comprising an elongated strap member including a lateral outward projection on one end portion, said one end portion projecting into said lock body bore with said projection projecting into the end of said lock bolt bore opening into said lock body bore, said strap member extending outwardly of



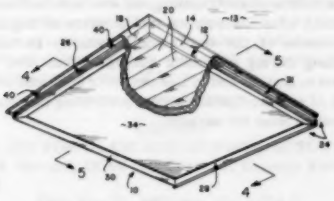
said lock body bore, being directed across said one side face of said door, toward and across the interface between the free swinging edge of the door and the opposing frame portion and across the frame portion to the side thereof remote from the free swinging edge and then being directed at least partially across and secured to the last mentioned side of the frame portion with the strap member at least substantially free of slack portions thereof extending between said projection and the portion of the strap member secured to the frame portion.

4,483,102

REMOVABLE LOUVER COVERING SYSTEM

James D. Edwards, 9701 Nash La., Mablevale, Ark. 72103

Filed Sep. 23, 1982, Ser. No. 422,459
Int. Cl.³ E06B *5/18*
U.S. Cl. 49—465 **2 Claims**



1. A removable energy saving covering system for selectively sealing conventional ventilation louver assemblies, the system comprising:

a generally planar louver covering member adapted to be removably secured in generally horizontally oriented parallel relation with respect to a ventilation louver to be sealed, the covering member comprising a rigid, generally rectangular frame comprising:

a rigid, elongated front extrusion member and a pair of parallel, spaced apart, elongated, rigid side extrusion members projecting perpendicularly from and coupled to said front extrusion member at opposite ends thereof;

a rear, elongated, rigid extrusion member rigidly coupled between said side extrusion members in spaced-apart, parallel relation with respect to said front extrusion member and including an integral outwardly projecting, bottom arcuate lip member;

a generally planar, rectangular sheet of insulating material secured by and enclosed between said frame extrusion members;

said frame front, rear and side extrusion members being generally of C-shaped cross section and including:

a rigid, generally planar top portion including channel means defined therein for mounting insulation strips adapted to form a seal around the periphery of said louver assembly;

an integral, rigid side portion including inwardly extending, integral boss means for facilitating assembly of said frame;

a lower, generally integral planar bottom generally parallel to said top and, in cooperation with said top, operative to to sandwich the edges of said sheet of insulating material therebetween; and,

said front and side frame extrusion members including an integrally outwardly extending generally planar, peripheral flange;

a rigid, generally L-shaped, elongated extruded hanging rail adapted to be permanently mounted adjacent said louver, said rail including a lower, arcuate lip portion adapted to be coupled to said rear frame member extrusion lip for hingeably mounting said covering member over said louver assembly; and,

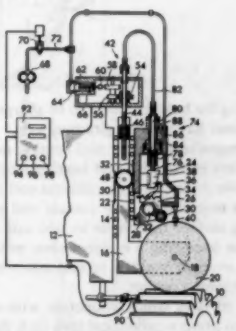
latch means for selectively securing said covering member in a closed, generally horizontal sealing position relative to said louver assembly.

4,483,103

DRESSING APPARATUS FOR A DISHED GRINDING WHEEL AT A TOOTH FLANK-GRINDING MACHINE

Hansjörg Bickel, Au, Switzerland, assignor to Maag Gear-Wheel & Machine Company Limited, Zürich, Switzerland

Filed Mar. 4, 1980, Ser. No. 127,368
Claims priority, application Switzerland, Mar. 17, 1979, 2503/79
Int. Cl.³ B24B *49/18*
U.S. Cl. 51—165.87 **9 Claims**



1. A dressing apparatus for a dished grinding wheel of a tooth flank-grinding machine, comprising:

a dressing carriage;

radial drive means for radially advancing the dressing carriage in relation to the grinding wheel;

a dressing tool for dressing the outer surface of the grinding wheel;

a feeler carried by the dressing carriage and serving for scanning a working end surface of the grinding wheel;

said feeler always moving radially during such axial feed of the grinding wheel;

said radial drive means moving said dressing tool and said feeler;

a tool support means at which the dressing tool is arranged

in offset relationship with respect to the feeler in the circumferential direction of the grinding wheel;

said tool support means being displaceably arranged at and carried by the dressing carriage for movement essentially parallel to the working end surface of the grinding wheel;

additional drive means for controlling the tool support means; and

said additional drive means being operatively connected with said radial drive means.

4,483,104

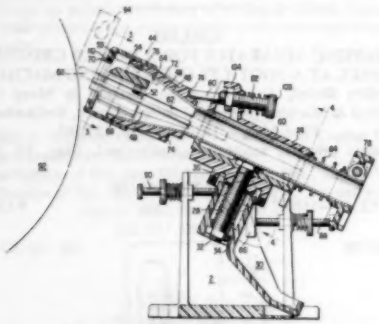
DRILL BIT SHARPENER

Edward V. Welliver, 3522 Rotary Rd., Rockford, Ill. 61109

Filed Mar. 30, 1982, Ser. No. 363,520

Int. Cl.³ B24B *19/00*

U.S. Cl. 51—219 R **14 Claims**



1. Apparatus for holding a tool to be sharpened comprising:

bearing means having a longitudinal axis,

rotatable means received by said bearing means and having an axis concentric with said bearing means axis,

said rotatable means having a conical end portion,

cam means mounted on said conical end portion having a camming surface transverse to said axis of said rotatable means for imparting a reciprocative motion about a pre-selected average position to said rotatable means as said rotatable means rotates,

a plurality of jaws which cooperate with said conical end portion to grasp a cylindrical tool such that the longitudinal axis of the tool is aligned with said bearing axis and said rotatable means axis,

a cam advancer for cooperating with said camming surface to impart said reciprocative motion,

said conical end portion including guide means for each of said jaws for maintaining the motion of each of said jaws in a constant radial direction with respect to said rotatable axis,

said cam advancer having one end for engaging said camming surface and being adjustable to alter the axial location of said one end to set said pre-selected average position of said rotatable means,

whereby when said rotatable means rotates, said tool rotates coaxially therewith and reciprocates along said bearing means axis.

4,483,105

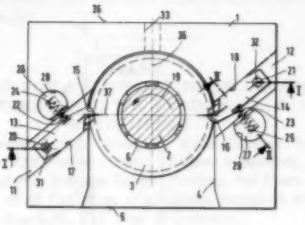
DEVICE TO HOLD WORKPIECES FOR THE HONING OF THEIR AXIAL CENTER BORE

Albert Bender, Ostfildern, Fed. Rep. of Germany, assignor to Maschinenfabrik Gehring, Gesellschaft mit beschrankter Haftung & Co. Kommanditgesellschaft, Fed. Rep. of Germany

Filed Mar. 11, 1983, Ser. No. 474,472

Int. Cl.³ B24B *19/00*

U.S. Cl. 51—227 R **10 Claims**



1. A device to hold peripherally toothed workpieces for the honing of an axial center bore therein, comprising:

(a) a workpiece support member having a center bore, a recess in one side thereof and continuing into the center of the support member for loading and unloading the workpiece, and a pair of grooves substantially diametrically opposed to each other and extending in an oblique direction relative to a horizontal center line through said recess and the axis of said support member, the inner ends of said grooves communicating with said bore,

(b) levers pivotably mounted in each of said grooves, said levers being of a width smaller than the width of said grooves and having end portions adapted to engage gaps between teeth of the workpiece, said levers engaging the edges of said grooves during the machining operation whereby said ends preclude rotation of the workpiece during the honing operation, and

(c) means for resiliently biasing said levers in the direction of rotation of machining to said position of engagement, movement of the workpiece outwardly through said opening during unloading biasing at least one of said levers so that the end of said one lever is rotated out of the path of said workpiece thereby permitting the same to be unloaded from the support.

4,483,106

WELD SANDER

Edward H. Wachs, and Ingval Johansson, both of Lake Forest, Ill., assignors to The E. H. Wachs Company, Wheeling, Ill.

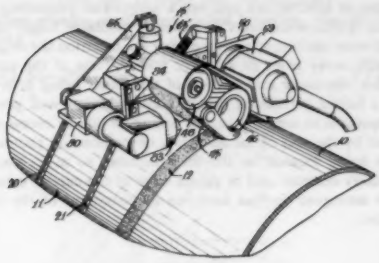
Filed Mar. 12, 1982, Ser. No. 357,831

Int. Cl.³ B24B *19/26, 21/02, 23/08*

U.S. Cl. 51—241 S **6 Claims**

1. A weld sander having a carriage movable circumferentially around a length of pipe adjacent a circumferential weld connecting an end of said pipe to another pipe, a grinding belt for operation on said weld, means mounting said grinding belt relative to said carriage for movement toward and away from said weld and for tilting movement aout an axis extending parallel to and spaced from the length of the grinding belt, said

axis being approximately equidistant from the edges of the belt, and pipe follower means for limiting movement of the grinding



belt toward the weld and for establishing a minimum distance between edges of the belt and the pipes when the belt tilts.

4,483,107

POLISHING METHOD FOR ELECTROPHOTOGRAPHIC PHOTOCONDUCTIVE MEMBER

Kageyuki Tomoyori; Tatsuo Uchida, and Tadashi Noda, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Division of Ser. No. 272,013, Jun. 9, 1981, abandoned. This application Dec. 7, 1982, Ser. No. 447,687

Claims priority, application Japan, Jun. 17, 1980, 55-80899; Jun. 17, 1980, 55-80901

Int. Cl.³ B24B *1/00*

U.S. Cl. 51—281 R **11 Claims**

1. A method of polishing an electrophotographic conductive member, which comprises polishing said member with polishing particles selected from the group consisting of (1) solid organic polishing particles composed of a polysilsesquioxane having, on its silicon atoms, substituents selected from the group consisting of a lower alkyl group having 2 to 5 carbon atoms, an alkoxy group, an aryl group and an aralkyl group; (2) a combination of said solid organic polishing particles and solid inorganic polishing particles in a weight ratio of 9:1 to 1:9; and (3) a combination of solid organic polishing particles composed of polymethylsilsesquioxane and solid inorganic polishing particles in a weight ratio of 9:1 to 1:9.

4,483,108

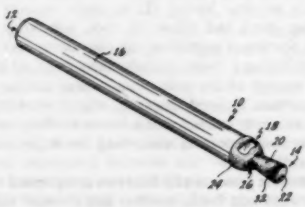
DRILL BIT FOR GLASS AND CERAMIC STRUCTURES

Gerald J. Howard, 11708 Woodley Ave., Granada Hills, Calif. 91344

Filed Sep. 13, 1982, Ser. No. 417,127

Int. Cl.³ B24B *1/00*; B23B *35/00*

U.S. Cl. 51—283 R **4 Claims**



1. A drill bit which comprises an elongated member having a cutting end and a retaining end, and an axis passing through said ends;

said member having a shank portion, said retaining end located on said shank portion, said shank portion sized and shaped so as to be capable of being retained and rotated in a tool or machine;

said shank portion distal to said retaining end terminating in a shoulder which tapers in a radius of curvature inwardly from said shank portion;

a pilot element extending axially from the center of said shoulder coaxial with said shank, said pilot element terminating in a cutting surface, said cutting surface forming the forwardmost portion of said cutting end of said member, said pilot element shaped as

a conical frustum, said cutting surface is an essentially flat surface with curved edges;

a cutting grit affixed to and covering said pilot element, said shoulder and the portion of said shank immediately adjacent to said shoulder;

as measured perpendicular to said axis of said member, the maximum cross-sectional dimension of said cutting surface of said pilot element, including said grit affixed thereto, being the maximum cross-section dimension of said pilot element as measured perpendicular to said axis of said member and being less than the cross-sectional dimension of said shank immediately adjacent to said shoulder, including said grit affixed thereto such that in passing through a material said grit on said cutting surface of said pilot element cuts a hole of a first dimension and said grit on said shoulder and said grit on said portion of said shank immediately adjacent to said shoulder enlarges said hole to a greater dimension.

4,483,109

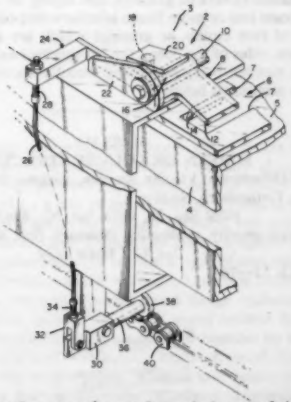
BOOM LATCHING SYSTEM

Wayne P. MacDonald, McConnellsburg, Pa., and James L. Smith, East Calder, Scotland, assignors to JLG Industries, Inc., McConnellsburg, Pa.

Filed Jul. 1, 1983, Ser. No. 509,907

Int. Cl.³ E04H *9/00*

U.S. Cl. 52—1 **11 Claims**



1. A boom latch system for a telescopic boom of the type comprising an outward relatively large boom section, and an inward relatively small boom section receivable into said large boom section, and longitudinally extending tensioned chain means for extending and retracting said small boom section relative to said large boom section, said latch system comprising:

ladder means for location longitudinally along a side of said small boom section and comprising at least one detent slot defined by side walls;

a latch plate for pivotal attachment to said large boom section and having a profiled remote end portion pivotal

from a first position within said detent slot to a second position away from said slot;

bias means for applying a bias force to said latch plate tending to rotate said end portion into said detent slot;

counter bias means for extension between said latch plate and said chain means, said counter bias means applying a counter bias force to said latch plate in reaction to tension forces in said chains means, whereby said latch plate end portion is normally rotated away from said detent slot.

4,483,110

METHODS OF INSTALLING FRAMES FOR ACCESS PITS AND MANHOLES

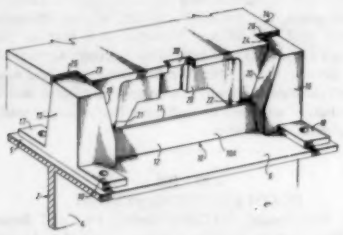
Derek Ferns, Trelleck, Wales, assignor to Selflevel Covers (Jersey) Limited, Jersey, Channel Islands

Filed Nov. 9, 1982, Ser. No. 440,434

Claims priority, application United Kingdom, Nov. 10, 1981, 8133880

Int. Cl.³ E02D *29/14*

U.S. Cl. 52—20 **8 Claims**



1. A method of installing frames for supporting multiple covers or gratings above an access pit or manhole, comprising spanning the clear opening of the pit or manhole by means of at least one support beam so as to divide the total clear area into smaller areas each of which is to be covered by a number of separate covers or gratings, and laying on the or each support beam one or more frame members shaped so as to support parts of two covers or gratings which are adjacent and on opposite sides of the beam, the longitudinal axis of the or each frame member being positioned directly above the center line of the associated beam.

4,483,111

SCREEN OR LOUVRE STRUCTURE

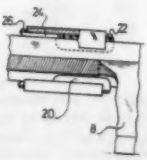
Sten Möllerström, Vinslöv, Sweden, assignor to Alusol Dasolas AB, Gothenburg, Sweden

Filed Sep. 28, 1982, Ser. No. 426,088

Claims priority, application Denmark, Sep. 28, 1981, 4279/81

Int. Cl.³ E04B *1/34*

U.S. Cl. 52—74 **4 Claims**



1. A screen structure comprising a plurality of interspaced carrier members and one or more longish screen members having a base flange, which is mountable in holding track means in said carrier members by a tilting insertion motion, whereby at least along one edge portion of the base flange a remaining space is left between this edge portion and the respective holding track, and further comprising filler members profiled so as to be endwise insertable into at least a partial length of said remaining space for stabilizing the base flange relative each carrier member, characterized in that each filler member at least at one end has a lengthwise projecting end portion which constitutes a resiliently bendable finger of reduced cross section, such that during the insertion the finger is bendable away from an adjacent wall portion of the carrier member, the outer end portion of the finger being provided with a lateral protrusion directed towards that wall portion and operable to snap outwardly behind an end or recess edge thereof by the end of the insertion, corresponding protrusion means being located on the filler member so as to abut an oppositely oriented end or recess edge of the carrier member by an attempted further insertion displacement of the filler member.

4,483,112

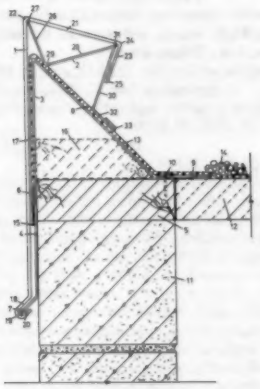
ROOF EDGE SYSTEM

Carl R. Ruebkeger, Marlton, N.J., assignor to Henry E. Millson, Jr., Medford, N.J., a part interest

Filed Dec. 11, 1981, Ser. No. 329,710

Int. Cl.³ E04D *13/15*

U.S. Cl. 52—94 **19 Claims**



1. In an edge structure for a flat roof having a substructure and having thereon a waterproof covering membrane, the combination comprising:

(a) a cant having (i) an outer vertical portion having a first section thereof which extends above the roof and a second section thereof which extends below the roof and which is secured to the outer edge of the roof substructure, and (ii) an inner portion which is inclined inwardly and downwardly to the roof and which is secured to the roof

(b) a fascia member having (1) an outer vertical portion extending above and below the roof, said outer vertical portion positioned parallel to the cant outer vertical portion, and having a lower end releasably engaged with said second section of the cant outer verical portion, (ii) an upper portion inclined inwardly and downwardly and having an upper surface and a lower surface, and (iii) a downward side portion describing an angle with said upper portion; and

(c) a deformable pressure clip held in a compressed relationship between said fascia member and the cant inner portion to hold a waterproof covering membrane firmly in place between the cant inner portion and the pressure clip wherein the pressure clip makes contact with the lower surface of the upper portion of the fascia member (b) (ii) in at least two discrete locations thereon.

4,483,113

WINDOW GLASS MOUNTING ARRANGEMENTS

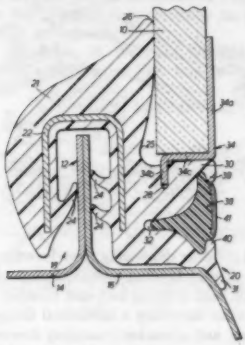
Werner Kruschwitz, Viersen, Fed. Rep. of Germany, assignor to Draftex Development A.G., Zug, Switzerland

Filed Sep. 21, 1982, Ser. No. 420,530

Claims priority, application United Kingdom, Jan. 20, 1982, 8201561

Int. Cl.³ E06B *3/62*

U.S. Cl. 52—208 **9 Claims**



1. A window glass mounting arrangement for mounting a window glass in a frame of a window opening, comprising

support means made with flexible material and for supporting the arrangement on the frame of the window opening and defining a surface of flexible material running around the window opening for receiving the window glass,

the said surface defining a slit,

a stiff longitudinally extending frame having projecting walls which project in opposite directions, one said wall being received in the said slit and the other engaging the outside surface of the window glass, around its periphery each said wall being of lesser thickness than the thickness of the window glass,

the flexible material defining a longitudinal slot in a face thereof facing outwardly of the window opening and spaced from the said surface, and

a removable stiffening member received and held in the said slot for stiffening the flexible material alongside the said slit so as firmly to hold the frame in position.

4,483,114

PREMANUFACTURED CORNER FRAMING AND SUPPORT STRUCTURE

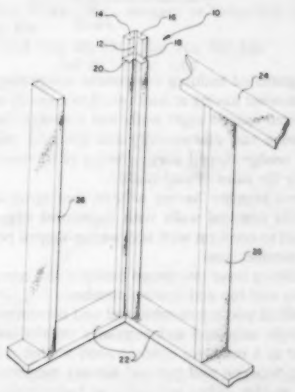
Ben N. Cox, 5009 Deer Garden Ct., Raleigh, N.C. 27606

Filed Apr. 29, 1982, Ser. No. 373,391

Int. Cl.³ F04B *1/00*

U.S. Cl. 52—281 **1 Claim**

1. In a wood framed wall structure including a pair of wood wall frame sections, with each having an inner and outer side, extending from a corner structure, the inprovement comprising a premanufactured wood corner frame support structure designed to be interposed and connected between said two wall framing sections to form a framed wall structure wherein the premanufactured wood corner frame support structure is designed for carrying and supporting axial loads bearing on the framed wall structure thereover, said axial load carrying premanufactured wood corner frame structure as vertically oriented and interposed between said two wood wall framing sections comprising: a vertical plywood web that extends vertically between said two wall framing sections and which includes opposed sides and inner and outer edges and wherein said plywood web includes a transverse width that is defined by that distance between said inner and outer edges and wherein said transverse width is approximately equal to the width of a respective wall framing section, and wherein said plywood web itself includes a thickness that is defined by the distance between opposed sides and wherein said web thickness is relatively thin as compared to said transverse width; an inner corner structure secured vertically to opposed sides of said plywood web adjacent said inner edge thereof, said inner corner structure including a pair of inner elongated vertical wood flanges secured to opposed sides of said web adjacent said inner edge of said web and wherein said inner elongated wood flanges extend substantially the vertical height of said web and extend in parallel relationship to each other and said inner edge; each inner wood flange including an elongated half two inch by four inch wood section cut from a nominal two inch by four inch wood member by diagonally cutting in half said two inch by four inch wood member from one end to the other end and wherein said diagonally cut half two inch by four inch section includes a diagonal cut face that normally abutts directly to and is connected to said plywood web to form a respective inner flange; said inner corner structure including a pair of inner side wall receiving surfaces formed by said diagonally cut two inch by four inch sections and wherein said inner side wall receiving surfaces aligned with and are generally coplanar with the inner side of the respective wood wall frame section so as to form a generally continuous coplanar inner side wall structure for receiving a selected inner wall covering along said wall frame structure formed by said wall



frame sections and said premanufactured corner frame structure; an outer corner structure formed vertically along opposed sides of said plywood web adjacent the outer edge thereof and including a pair of outer elongated vertical wood flanges secured to opposed sids of said plywood web adjacent said outer edge thereof and wherein said outer elongated wood flanges extend substantially the vertical height of said web and extend in parallel relationship to each other and said outer edge of said plywood web; each outer wood flange including an elongated half two inch by four inch wood section formed from a nominal two inch by four inch wood member by diagonally cutting in half said two inch by four inch wood member from one end to the other end and wherein said diagonally cut half two inch by four inch section includes a diagonally cut face that normally abutts directly to and is connected to said plywood web to form a respective outer wood flange; and wherein said outer corner structure includes a pair of outer side wall receiving surfaces formed by said outer elongated diagonally cut half two inch by four inch flanges and wherein said outer side wall receiving surfaces align with and are generally coplanar with the outer sides of the respective wall frame sections so as to form a generally continuous coplanar outer side wall structure for receiving a selected outer wall covering along said wall frame structure formed by said frame sections and said premanufactured corner frame structure interposed

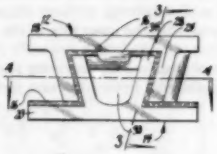
between said wall frame sections whereby said premanufactured corner frame structure carries and supports a vertical corner load and further by the provision of said inner and outer side wall receiving surfaces allow selective inner and outer side wall coverings to be applied continuously and smoothly from the respective wall frame sections to the corner frame structure and further permits the selected side wall covering to be actually secured directly to the respective inner and outer wall receiving surfaces of said premanufactured corner frame structure.

4,483,115

INSULATED BUILDING COMPONENT

James L. Schoenfelder, 1926 Farrel Dr., Coralville, Iowa 52241

Filed Apr. 12, 1982, Ser. No. 367,446
Int. Cl.³ E04C *1/40*
U.S. Cl. 52—309.12 **7 Claims**



1. An insulated building component comprising:

a top member having at least two downwardly and inwardly oriented spaced apart walls and a wedge-shaped portion between said downwardly and inwardly oriented walls, said wedge-shaped portion being of increasing thickness along the sides of said walls;

a bottom member having at least two upwardly and outwardly oriented walls with uppermost edges which are sloped to conform with said wedge-shaped portion of said top member; and

an insulating layer interposed between and completely separating said top and bottom members;

the walls of said top member and said bottom member being matingly adjoined and angularly interlocked with each other in a retentive configuration so that relative movement between said top and bottom members apart from one another either vertically or horizontally away from the downward slope of said wedge-shape portion of said top member is prevented, and the mating adjoinment of said wedge-shaped portion of said top member and said sloped uppermost edges of said vertically and outwardly oriented walls of said bottom member prevents relative movement between said top and bottom member laterally in the directon of said downward slope of said wedge-shape portion of said top member, so that relative movement in any direction between said top and bottom members is prevented and any force of forces that would cause movement between said top and bottom members instead causes increasing retentive force between all adjacent surfaces of said top and bottom members.

4,483,116

CEILING SYSTEM WITH CEILING CONVERSION STRIP

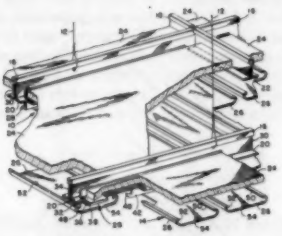
J. Lynn Gailey, Newton Falls, Ohio, assignor to Alcan Aluminum Corporation, N.Y.

Filed Oct. 6, 1980, Ser. No. 194,082
Int. Cl.³ E04B *5/52*
U.S. Cl. 52—484 **4 Claims**

1. In combination, a drop-in ceiling system formed of an interconnected reticulated grid of inverted T-beams supporting a plurality of rectangular drop-in ceiling panels, a linear system formed of elongated strip elements, and a conversion strip for connecting said linear ceiling system to said drop-in ceiling system,

said conversion strip comprising

an axially extending L-beam a first leg of which engages the top of a horizontal portion of a T-beam and a second leg of which extends upwardly for positioning between the vertical web portion of the T-beam and a ceiling panel,



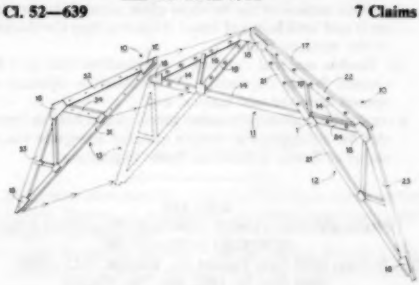
a flat elongated member depending from an edge portion of said first leg of said L-beam and extending substantially parallel therto, said first leg and said member defining a U-shaped slot for receiving a horizontal flange of an inverted T-beam, and a bracket extending downward from said member and having a pair of oppositely extending flange means for engaging a strip element.

4,483,117

COMPOSITE GAMBREL ROOF TRUSS WITH PREFABRICATED TRUSS COMPONENTS

George R. Underhill, and Magued Orfi, both of Elmira, N.Y., assignors to Alpheus Finch Underhill, Elmira, N.Y.

Filed Nov. 5, 1981, Ser. No. 318,448
Int. Cl.³ E04B *1/32*
U.S. Cl. 52—639 **7 Claims**



1. A composite truss assembly comprising:

A. a prefabricated top truss unit formed of three rigid chords, a rigid lower chord and two rigid top chords, all connected together to form a rigid triangular top truss unit having a peak junction and two hip junctions,

B. two independent prefabricated side truss units, each also formed of three rigid chords joined to form a rigid triangular side truss unit with a rigid diagonal base chord and two outer top chords joined to form a hip junction, with the uppermost ends of the two side truss units positioned near the peak junction, and wherein the topmost chord of each side truss unit substantially co-extends in juxtaposition with a top chord of the top truss unit from the peak junction to one hip junction to produce a four-chord arched gambrel roof truss assembly, and

C. a plurality of spaced top connector means joining the topmost chord of each side truss unit with its abutting

mating top chord of the top truss unit at a plurality of points along their juxtaposed lengths,

whereby the prefabricated top truss unit can be readily connected at a construction site to both of the side truss units to form a sturdy, rigid composite truss assembly capable of rapid installation by being hoisted bodily into position.

4,483,118

SUPPORT SYSTEM FOR BUILDING CONSTRUCTION

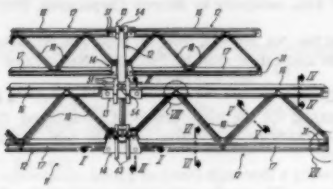
Anton-Peter Betschart, Tuchmachergasse 3a, D-7000 Stuttgart 50, Fed. Rep. of Germany

Filed Jan. 13, 1981, Ser. No. 224,677

Claims priority, application Fed. Rep. of Germany, Jan. 16, 1980, 3001309

Int. Cl.³ E04C *3/02*

U.S. Cl. 52—648 **37 Claims**



1. A support system for a structure such as a building, said system comprising:

(a) a plurality of structural members under tensile and/or compressive load, each of said structural members including an elongated first beam having a neutral axis, an elongated second beam spaced from the respective first beam and having a neutral axis, a plurality of inclined beams connecting the respective first and second beams and having respective neutral axes, and ribs on said elongated beams forming extensions of said inclined beams, and each of said structural members comprising at least one pair of neighboring inclined beams which converge in a direction towards a predetermined elongated beam of the respective structural member, the ribs which form extensions of neighboring converging inclined beams merging with one another substantially at the neutral axis of the respective predetermined elongated beam, and each of said structural members being constituted by a single casting of a ductile metallic material; and

(b) connecting members connecting said structural members with one another.

4,483,119

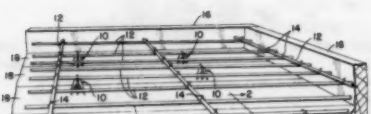
BAR SUPPORT FOR USE WITH REINFORCED CONCRETE

Ernest Hernandez, 1237 Thackery, West Covina, Calif. 91790

Continuation of Ser. No. 249,871, Apr. 1, 1981, abandoned. This application Jun. 23, 1983, Ser. No. 507,700

Int. Cl.³ E04C *5/20*

U.S. Cl. 52—689 **12 Claims**



1. A support for use with an associated reinforcing rod, which is intended for reinforcement of concrete, which comprises:

first and second generally planar members;

said first member having a body portion, a first elongated leg and a second elongated leg, said first and second elongated legs thereof extending from said body portion in mutually diverging relationship, said body portion having an edge opposite to a side from which said first and second legs extend which is substantially rectilinear;

said second member having a body portion, a first elongated leg and a second elongated leg, said first and second elongated legs thereof extending from said body portion in mutually diverging relationship, said body portion having an edge opposite to a side from which said first and second legs extend which has upstanding extremities to constrain movement of an associated reinforcement rod; and

means for engagement of said body portions of said first and second generally planar members for fixing them in substantially normal relationship, said means comprising a slot in each body portion.

4,483,120

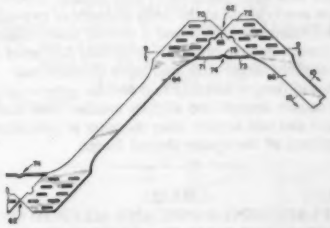
HINGED METAL WEB FOR TRUSS STRUCTURES AND METHOD OF MAKING

Robert Gottlieb, Miami, Fla., assignor to Gang-Nail Systems, Inc., Miami, Fla.

Filed May 24, 1982, Ser. No. 381,220

Int. Cl.³ E04C *3/02*

U.S. Cl. 52—693 **6 Claims**



1. A hinged metal web member for interconnecting elongated wooden members which are arranged so as to extend parallel to each other with a spacing therebetween, thus forming a truss or joist assembly capable of bearing substantial loads, said web member having a V-shaped formation in the operative position and being formed from a sheet metal plate, said hinged metal web member comprising: a pair of leg members; means for hingedly connecting said leg members at respective end portions thereof to form the apex of said V-shaped formation, each of said respective end portions including a connector plate; said hingedly connecting means allowing said leg members to be positioned between a close fitting, compact configuration in which the leg members extend generally parallel and a configuration in which the leg members define a V shape; said hingedly connecting means including a tab portion which joins the connector plates at said apex end portions, and a connector link extending between said apex end portions locking said legs in the V-shaped formation, said tab portion and said connector link being formed with said adjacent connector plates as a single piece construction with said connector link including a pair of generally planar end portions connected by a raised center portion which defines a bore when the web is in the compact configuration; a connector plate located at the extremity of each of said legs opposite said apex; each connector plate having struck out therefrom a plurality of teeth, all of said teeth extending from the same side of said hinged metal web member.

4,483,121

ANCHOR CONSTRUCTION FOR CONCRETE WALLS OR SLABS

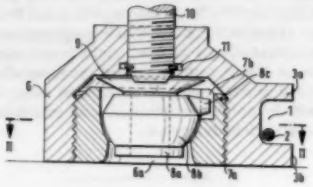
Helmut Froening, and Mohamed Basyouni, both of Mannheim, Fed. Rep. of Germany, assignors to Hochtemperatur-Reaktorbau GmbH, Cologne, Fed. Rep. of Germany

Filed Jun. 30, 1983, Ser. No. 509,375

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1982, 3224985

Int. Cl.³ E04B *1/38*

U.S. Cl. 52—698 **16 Claims**



1. An anchor construction for concrete walls or slabs comprising:

a reinforcing grid of reinforcing rods forming a uniform mesh cast in said concrete wall or slab, and

at least one clamping member having a pair of flanges defining an annular groove, said clamping member being mounted in said reinforcing grid with the reinforcing rods in said annular groove,

wherein a first inner diameter of said annular groove is less than or nearly equal to the inner distance of two adjacent, parallel reinforcing rods and a second inner diameter of said annular groove offset 45° from said first inner diameter is slightly larger than said inner distance and

wherein said flanges defining said annular groove are essentially square shaped and slightly smaller than said inner distance and said second inner diameter is coincident with the corners of the square shaped flange.

4,483,122

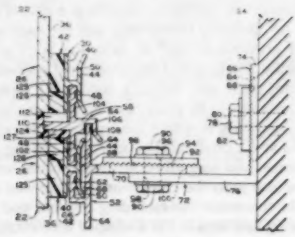
REPLACEMENT PANEL AND METHOD OF INSTALLING SAME IN A CURTAINWALL

Stephen L. Crandell, Gibsonia, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 65,318, Aug. 9, 1979, Pat. No. 4,307,551. This application Oct. 16, 1981, Ser. No. 311,822

Int. Cl.³ E04G *21/00*

U.S. Cl. 52—747 **17 Claims**



1. A method of replacing a selected panel of a cladding system, the system having vertical and horizontal structural support comprising the steps of:

removing panel to be replaced from the cladding system to provide an opening;

removing at least previously mounted side hangers and previously mounted bottom hanger from the opening to provide access to the vertical and horizontal structural supports;

mounting side hangers and bottom hanger in the opening attached to the vertical and horizontal structural supports of the system;

providing an adhesive between replacement panel and the side hangers and bottom hanger mounted in the opening of the system; and

urging the replacement panel against the hangers to flow the adhesive therebetween to secure the replacement panel in the opening.

4,483,123

METHOD FOR MANUFACTURING AND PACKAGING A PET COLLAR

Joe D. McDaniel, Jr., Dallas, and Paul L. Pruitt, Carrollton, both of Tex., assignors to Zoecon Corporation, Palo Alto, Calif.

Division of Ser. No. 206,916, Nov. 14, 1980, Pat. No. 4,348,321. This application Aug. 10, 1982, Ser. No. 407,006

Int. Cl.³ B65B *63/00*

U.S. Cl. 53—428 **4 Claims**

1. A method for the manufacture of a packaged, flexible, solid, ectoparasiticidally effective pet collar which comprises the steps of:

(a) preparing a thorough blend of a solid composition comprising a solid, vinylic resin, ectoparasiticidally effective amount of recrystallized phosmet and plasticizer; said recrystallized phosmet having been prepared by recrystallization of phosmet in a toluene and methanol mixture in which the ratio of toluene and methanol is within 1:2.5 to 1:1 by weight, and being free of offensive mercaptan type odor;

(b) extruding said composition to form a continuous length of extrudate having a width and thickness suitable for a pet collar;

(c) cutting said extrudate into individual segments suitable for a pet collar and affixing a buckle at one end of the segment; and

(d) sealing each segment in a pouch made of spunbonded olefin, said packaged collar characterized by the absence of offensive mercaptan type odor upon opening of the package.

4,483,124

SHEET-LIKE MATERIAL PROCESSING APPARATUS

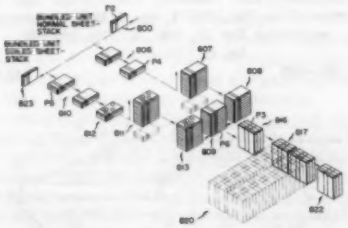
Hiroshi Ohba, and Shigeo Horino, both of Tokyo, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Continuation of Ser. No. 176,567, Aug. 8, 1980, abandoned. This application Jan. 11, 1983, Ser. No. 457,131

Claims priority, application Japan, Sep. 21, 1979, 54-120608

Int. Cl.³ B07C *5/34;* **B65B** *13/10, 57/10*

U.S. Cl. 53—54 **29 Claims**



3. A sheet processing apparatus comprising:

sheet take-out/transfer means for taking out sheets set in a sheet supply section on a sheet-by-sheet basis and for transferring said sheets;

inspecting means for classifying said transferred sheets into at least a first and second class;

transfer/sorting means for transferring and sorting said classified sheets into said first and second classes;

first collecting means for collecting a predetermined number of said sorted sheets for each of said first and second classes;

first bundling means for bundling said collected sheets together into packets for each of said first and second classes;

transfer means for transferring said packets;

second collecting means for collecting a predetermined number of said transferred packets for each of said first and second classes; and

second bundling means for bundling said collected packets together into bundles for each of said first and second classes.

4,483,125

MACHINE FOR PACKAGING A COMMODITY INTEGRALLY WITH A TRAY

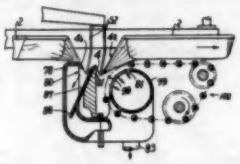
Tadoru Suga, 5-5 Shinnakajo-cho, Ibaragi-shi, Osaka-fu, Japan

Filed Mar. 12, 1981, Ser. No. 242,992

Claims priority, application Japan, Mar. 11, 1980, 55-31303

Int. Cl.³ B65B *9/10, 51/14, 51/20*

U.S. Cl. 53—450 **32 Claims**



1. A method of packaging articles in continuously moving trays comprising:

(a) enclosing said trays in a tube of film while continuously moving said trays;

(b) causing a falling member to fall upon said tube of film between adjacent trays pressing said tube of film upon a slidable friction plate;

(c) exerting downwardly suction forces adjacent each side of said friction plate;

(d) causing said slidable friction plate to slide downwardly by the force of the falling member, exposing a knife means;

(e) severing said tube of film with said knife means providing a trailing end flap on the preceding tray and a leading end flap on the succeeding tray;

(f) decreasing said downwardly suction force on one side of said friction plate while simultaneously increasing said downwardly suction force on the other side of said friction plate; and

(g) folding the end flaps upwardly against the respective trays.

4,483,126

ADJUSTABLE DRIVE MECHANISM

Nelson R. Henry, Decatur, Ga., assignor to The Woodman Company, Inc., Decatur, Ga.

Filed Feb. 17, 1982, Ser. No. 349,517

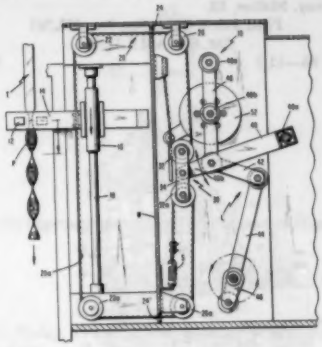
Int. Cl.³ B65B *51/26, 51/30*

U.S. Cl. 53—551 **15 Claims**

1. An adjustable drive mechanism for driving a reciprocating/oscillating part in a machine and controlling the stroke length, comprising:

(a) moving means operatively connected to the part;

(b) linkage means operatively connected to drive the moving means, said linkage means including a working arm connected to the moving means and a control link having a selectively adjustable pivot to control the degree of movement imparted by the working arm to the moving means; and



(c) control means for bodily displacing the movable pivot relative to a first position so as to adjust the stroke length during movement of the reciprocating/oscillating part.

4,483,127

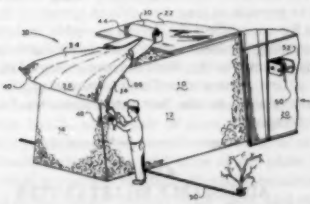
COTTON MODULE COVER

Roy C. Forkner, Lubbock, Tex., assignor to Lubbock Interstate Sales Co., Inc., Lubbock, Tex.

Filed Jun. 14, 1982, Ser. No. 388,178

Int. Cl.³ B65B *11/02*

U.S. Cl. 53—580 **4 Claims**



1. A builder for building a stack of agricultural product on the ground having

a. two side walls,

b. a tramper between the side walls for tramping agricultural product between the walls on the ground,

c. wheels on the side walls,

d. means on the side walls for elevating and lowering the wheels so that the side walls may be lowered to the ground or raised to move the builder, and

e. a back gate pivoted at its top between the side walls to allow movement of the builder away from the built stack with the stack passing under a raised gate;

wherein the improvement comprises:

f. a bracket mounted on the back gate,

g. a horizontal spindle supported by said bracket, and

h. a rolled tarp on the spindle,

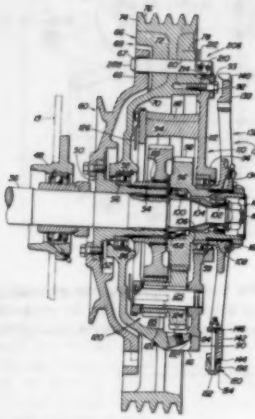
i. so that after the stack is built, the builder raised is, the back gate gate is raised, and as the builder is moved the stack passes out of the builder and the tarp is unrolled on the stack from the back door raised thereover.

4,483,128

VARIABLE DRIVE FOR A HARVESTER FUNCTIONAL ELEMENT

Robert W. Hawkins, Rapids City, Ill., assignor to Deere & Company, Moline, Ill.

Filed Jul. 6, 1982, Ser. No. 395,767
Int. Cl.³ A01F *12/00*
U.S. Cl. 56—11.1 **22 Claims**



1. A drive mechanism for a rotatable element of a harvesting machine carried on a shaft journaled in the structure of the harvesting machine comprising:

a driven assembly, including a body having an external circumferential drive surface, journaled on the shaft and including an internal gear train for drivably connecting the body to the shaft and including an input gear journaled on the shaft, the driven assembly being selectively operable to provide at least two driven speeds of the shaft; and

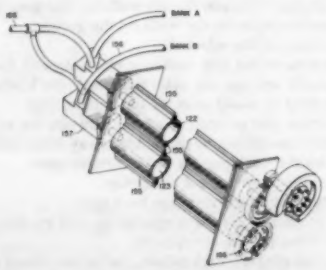
means for controlling the driven assembly including a single connecting element usable selectively for connecting the body directly to the shaft independently of the gear train for a first driven speed and connecting the input gear non-rotatably to the harvester structure for a second driven speed.

4,483,129

ADJUSTABLE BILLET CUTTER

Leslie J. Lester, Bundaberg, Australia, assignor to Versatile Corporation, Vancouver, Canada

Filed Sep. 28, 1982, Ser. No. 426,151
Int. Cl.³ A01D *45/10, 55/264*
U.S. Cl. 56—13.9 **9 Claims**



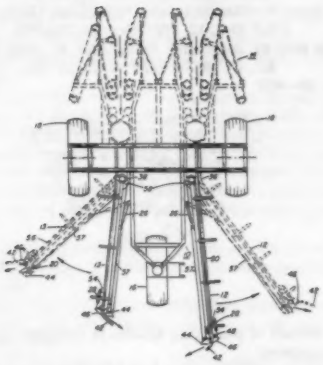
1. An adjustable billet cutter for a cane harvester comprising chopper rolls to cut cane into billets, each of said chopper rolls being powered by a respective hydraulic motor, each of said hydraulic motors having a different displacement capacity, hydraulically powered conveyor rolls to convey said cane to said chopper rolls, a first fluid connection between the outlet of a first of said hydraulic motors and said hydraulically powered conveyor rolls, said fluid connection being interchangeable between said outlet of said first hydraulic motor and the outlet of a second of said hydraulic motors.

4,483,130

ASSOCIATED RUNNING GEAR AND PILER IMPROVEMENTS IN A TWO ROW HARVESTER AND PILER

Richard A. Duncan, Thibodaux, La., assignor to Cane Harvest, Inc., Thibodaux, La.

Continuation of Ser. No. 470,068, Feb. 28, 1983, abandoned, which is a continuation of Ser. No. 215,999, Dec. 12, 1980, Pat. No. 4,380,281. This application Oct. 11, 1983, Ser. No. 540,285
Int. Cl.³ A01D *45/10*
U.S. Cl. 56—14.3 **4 Claims**



1. A whole stalk, sugar cane harvester for simultaneously cutting adjacent, parallel rows of cane separated by a furrow and selectively piling the cane laterally to said rows either outwardly or inwardly behind the harvester, comprising:

(a) a harvester chassis having a pair of front wheels adapted to travel outside said adjacent cane rows and a rear wheel centered between the two front wheels and adapted to travel in the furrow between said rows;

(b) means for steering and propelling the harvester along the cane rows;

(c) cane gathering and cutting means mounted on the chassis at the front of the machine for gathering and cutting cane simultaneously in said adjacent cane rows and forming the front portion of a cane travel path;

(d) a pair of piler arms with outer and inner ends, pivotally mounted at their ends on opposite sides of the chassis behind the gathering and cutting means, forward of the rear wheel and inside the front wheels;

(e) a pair of cane travel paths on opposite sides of the rear wheel formed between the cutting and gathering means and the outer ends of the piling arms, the cane travel paths including means for transporting cane along said travel paths;

(f) piler arm moving means for selectively moving the outer ends of the piler arms between outboard and inboard positions;

(g) the piler arms being shaped and located so that the travel paths are free of sharp angles when the piler arms are in both the inboard and outboard positions;

(h) the piler arms being sized and located so that the outer ends of both piler arms project outside the front wheels in the outward position, one piler arm being sufficiently

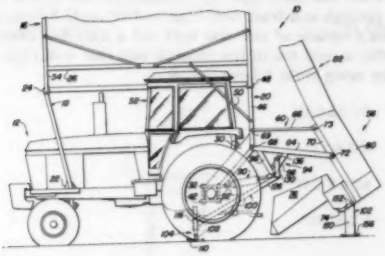
longer than the other one so that the cut cane from both piler arms can be simultaneously piled over said furrow when the piler arms are in the inboard position; and

(i) means for simultaneously piling the cut cane from both rows outwardly lateral to the row from which the can is cut when the piler arms are in the outboard position and inwardly lateral to said rows and over said furrow when the piler arms are in the inboard position.

4,483,131
TRACTOR-MOUNTED HARVESTER

Francis E. Schlueter, Des Moines, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Dec. 27, 1982, Ser. No. 453,435
Int. Cl.³ A01D *46/08*
U.S. Cl. 56—15.6 **38 Claims**



1. In a tractor-mounted harvester having a crop receptacle mounted above the tractor on upright support members normally fixed to the tractor frame, a lift assembly connected for rocking vertically with respect to the upright support members, harvesting structure connected to and rockable with the lift assembly, and activatable power means connected to the lift assembly for vertically rocking the lift assembly and harvesting structure with respect to the tractor frame, means for lifting the crop receptacle from the tractor and providing a generally unobstructed path for the tractor in one of the fore-and-aft directions, said means for lifting comprising:

attaching means for selectively releasing the upright support members from the tractor frame;

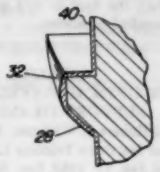
stand means selectively attachable to the lift assembly, said stand means in the attached position extending downwardly from the lift assembly to a ground-contacting portion, and preventing substantial vertical rocking of the lift assembly when the power means is activated and the attaching means is released for rocking the upright support member and crop receptacle relative to the lift assembly between mounted and dismounting positions, wherein in the dismounting position, the crop receptacle is positioned away from the tractor path.

4,483,132
COTTON PICKER SPINDLE

Glenn D. Head, Jr., Des Moines, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Feb. 14, 1983, Ser. No. 465,982
Int. Cl.³ A01D *46/16, 46/08*
U.S. Cl. 56—50 **16 Claims**

1. In a cotton picker spindle having an elongated, tapered picking end of unitary construction and rotatable about its principle axis, said spindle including a plurality of teeth projecting in the direction of rotation and including upper, somewhat flattened surfaces, the improvement comprising: a smooth, thin ceramic wear coating covering substantially the entire picking end, said ceramic coating having a greater thickness on the flattened surfaces and defining therewith hook-like

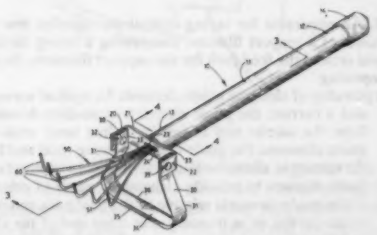


structure for improved picking and doffing and increased tooth life.

4,483,133
WORK IMPLEMENT

Harry M. Pasley, Fresno, Calif., assignor to Chilucaley Co., Fresno, Calif.

Filed Apr. 18, 1983, Ser. No. 485,705
Int. Cl.³ A01D *7/10*; A01B *1/20*
U.S. Cl. 56—400.06 **9 Claims**



8. A work implement comprising a handle having an end portion; a plate mounted on said end portion having a contact portion defining a substantially flat plane substantially normal to the handle and facing substantially endwardly from said end portion of the handle and a pair of arms disposed in spaced relation; and a pendulum-action tool having a pair of mounting ends individually mounted on said arms of the plate for substantially pivotal movement substantially about an axis substantially parallel to the contact portion of the plate, said mounting ends having corresponding lateral edges facing the contact portion of the plate and positioned relative thereto so that contact of said lateral edges with the contact portion of the plate during said substantially pivotal movement of the tool defines a range therefor.

9. A work implement comprising a handle having an internal chamber bounded by a wall and the chamber communicating with the exterior of the handle through an opening; a tool mounted within the chamber of the handle for movement between a retracted position substantially contained within the handle and an extended position in which said tool is disposed for use and wherein the tool has a plurality of tines which, when the tool is disposed in the extended position, resiliently radiate laterally from each other such that when the tines are placed in endward engagement with material to be retrieved and upon movement of the handle endwardly toward said material to be retrieved, the tines are moved toward the retracted position and simultaneously toward each other to capture said material between adjacent tines for retrieval using the handle; first means borne by the tool within said chamber having portions disposed in slidable contact with the wall for guiding the tool in movement between said retracted and extended positions; and a pair of juxtaposed tines borne by the

tool within the chamber in spaced relation to the first means and extending in the opposite direction relative to the first means from the opening of the handle and biased resiliently in opposite directions to engage the wall of the handle in slidable contact for guiding the tool in said movement between said retracted and extended positions.

4,483,134

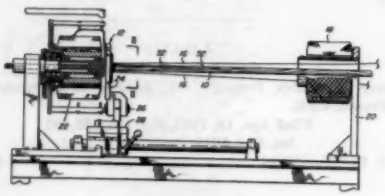
LAYING OF OPTICAL WAVEGUIDES ONTO A SUPPORT FILAMENT

Glen McKay, and Robert J. Williams, both of Saskatoon, Canada, assignors to Northern Telecom Limited, Quebec, Canada

Filed Jan. 17, 1983, Ser. No. 458,212

Int. Cl.³ G02B *5/16*; H01B *13/00*; B65H *81/08*

U.S. Cl. 57—18 **6 Claims**



1. An apparatus for laying optical waveguides into sinous grooves of a support filament comprising a laying device disposed around the feed path for the support filament, the device comprising:

a plurality of elongate guide elements for optical waveguides and a carrier, the guide elements extending downstream from the carrier and inwardly to free inner ends of the guide elements, the guide elements being rigid and held by the carrier to allow for lateral swinging movement of each guide element to provide a change in angle of orientation of the guide elements relative to the feed path and relative to the carrier so as to enable the inner end of the element to follow the path of a groove in the support filament as it moves downstream from the carrier; and

at least one groove locating projection for engagement with a groove in the support filament to retain positional relationship between the carrier and support filament as the filament passes through the carrier.

4,483,135

DUST-REMOVING MECHANISM IN OPEN-END SPINNING FRAME

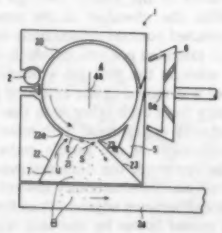
Tadanori Kurushima, Kariya, and Kazuo Kamiya, Nishio, both of Japan, assignors to Seisakusho Kabushiki Kaisha Toyoda Jidoshokki, Kariya, Japan

Filed Nov. 2, 1983, Ser. No. 547,770

Claims priority, application Japan, Nov. 5, 1982, 57-193322

Int. Cl.³ D01H *7/888*, *11/00*

U.S. Cl. 57—301 **5 Claims**



1. A dust-removing mechanism in an open-end spinning frame having a rotor, including a combing roller for separating a supplied sliver into fibers, an outer wall surrounding said combing roller and having a dust-removing opening, and a dust-removing chamber into which said dust-removing opening opens, so that impurities will be separated from the sliver by said combing roller and discharged through said dust-removing opening into said dust-removing chamber, wherein the improvement comprises a rear wall disposed upstream in the direction of rotation of said combing roller and having an edge and a front wall disposed downstream in said direction, said front and rear wall edges jointly defining said dust-removing opening, there being an angle α formed between first and second lines passing through said front and rear wall edges and the center of said combing roller, an angle β formed between a third line passing through the center of said combing roller and the center of an opening in the rotor and a fourth line passing through the center of said combing roller perpendicularly to said third line, an angle Y formed between a surface of said front wall and a fifth line extending parallel to said fourth line through said front wall edge, and an angle δ formed between a surface of said rear wall and a sixth line extending parallel to said fourth line through said rear wall edge, said angles being in the following ranges:

$$40° \leqq \alpha \leqq 45°$$

$$0° \leqq \beta \leqq 5°$$

$$40° \leqq Y \leqq 45°$$

$$0° \leqq \delta \leqq 20°$$

4,483,136

PNEUMATIC FIBER CONTROL ARRANGEMENT FOR OPEN END FRICTION SPINNING MACHINES

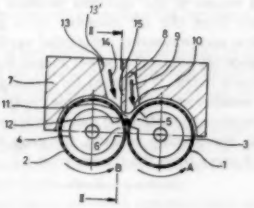
Fritz Stahlecker, Josef-Neidhart-strasse 18, 7347 Bad Überkingen, and Heinz Merkel, Göppingen-St. Gotthardt, both of Fed. Rep. of Germany, assignors to Hans Stahlecker, Süssen and Fritz Stahlecker, Bad Überkingen, both of, Fed. Rep. of Germany

Filed Feb. 24, 1984, Ser. No. 583,231

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1983, 3308250

Int. Cl.³ D01H *1/135*, *7/898*

U.S. Cl. 57—401 **33 Claims**



1. Apparatus for open end friction spinning comprising:

two friction rollers arranged adjacent one another to form a yarn forming wedge slot therebetween, said friction rollers being rotatably driven in the same rotation with one inwardly rotating roller having its cover surface rotating inwardly toward the wedge slot and the other outwardly rotating roller having its cover surface rotating outwardly from the wedge slot,

fiber feed channel means for guiding fibers to the region of the rollers, said fiber feed channel means including a fiber feed inlet opening in the region of one of the wedge slot and the outer surface of the inwardly rotating roller,

transport air stream inducing means for inducing a flow of transport air to aid in the transport of the fibers in the feed channel means,

and auxiliary air stream inducing means for inducing an auxiliary air flow adjacent the outer surface of the outwardly rotating roller opposite the rotational direction of the outwardly rotating roller toward the wedge slot, whereby undesired transport of fibers away from the wedge slot by the outwardly rotating roller is minimized to improve yarn uniformity and quality.

4,483,137

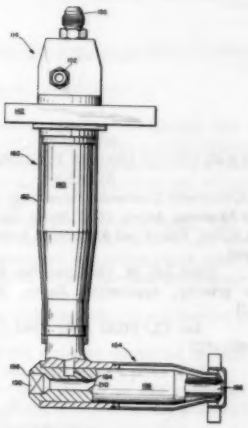
GAS TURBINE ENGINE CONSTRUCTION AND OPERATION

Robie L. Faulkner, Santee, Calif., assignor to Solar Turbines, Incorporated, San Diego, Calif.

Filed Jul. 30, 1981, Ser. No. 288,510

Int. Cl.³ F02C *7/00*

U.S. Cl. 60—39.55 **15 Claims**



1. Combustion apparatus comprising the combination of: a combustor in which liquid fuel can be burned and means for reducing the emission of nitrogen oxides from said combustor, said last-mentioned means comprising means for; introducing a liquid coolant and the liquid fuel into said combustor; there mixing said coolant with said fuel; atomizing the fuel and coolant and forming a uniform mixture of fuel, coolant, and combustion air as the mixture enters the primary combustion zone in said combustor, said means for introducing a liquid coolant and the liquid fuel into said combustor comprising at least one fuel injection nozzle for introducing the liquid fuel into the combustor and means for introducing said liquid coolant into said combustor through said fuel injection nozzle, said fuel injection nozzle comprising a body having a centrally disposed combustion air passage extending through and opening onto one end thereof and an annular liquid fuel passage concentrically surrounding said air passage and opening onto the same end of the nozzle as said combustion air passage; said combustor further comprising means for introducing the liquid fuel into said annular passage; means for introducing the liquid coolant into the combustion air passage, and means for forming said liquid coolant into a film on the wall of said combustion air passage comprising means for introducing air into said centrally disposed passage and means for imparting a swirl to the air in said centrally disposed passage, thereby promoting the uniform mixing of said coolant and said fuel as they are discharged from said one end of said fuel injection nozzle.

4,483,138

GAS FUEL INJECTOR FOR WIDE RANGE OF CALORIFIC VALUES

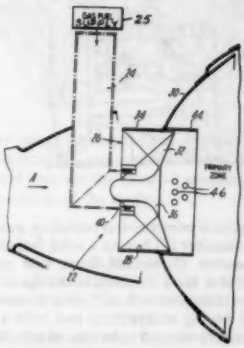
Jeffrey D. Willis, Coventry, England, assignor to Rolls-Royce Limited, London, England

Filed Oct. 5, 1982, Ser. No. 432,823

Claims priority, application United Kingdom, Nov. 7, 1981, 8133640

Int. Cl.³ F02C *3/22*; F23R *3/14*

U.S. Cl. 60—39.465 **5 Claims**



1. A combustion system for a gas turbine engine having air compressor means, combustion means and turbine means in a flow series, said combustion system being capable of use with gas fuels having a range of calorific values and comprising:

a combustion chamber having a primary zone at an upstream end thereof;

a gas fuel supply;

a gas fuel duct communicating with said gas fuel supply and having an outlet;

a gas fuel injector, said gas fuel injector including a swirler assembly having upstream and downstream ends and arranged to receive a flow of compressed air from said compressor means and a flow of gas fuel from said outlet of said gas duct, said swirler assembly including an outer housing having upstream and downstream ends, an inner hub concentric with and spaced from said outer housing, said hub having upstream and downstream ends, and a plurality of swirler vanes positioned between said outer housing and said inner hub, said vanes having outer upstream and downstream portions and inner upstream and downstream portions, said outer housing, said inner hub and said swirler vanes defining a plurality of passages of decreasing cross-sectional area in a direction of flow therethrough, said outlet of said gas fuel duct being greater in diameter than said upstream end of said hub and smaller in diameter than said upstream end of said housing and terminating between said upstream and downstream ends of said swirler assembly, said gas fuel duct, said hub and said inner upstream portion of said vanes forming gas fuel flow passages, and said gas fuel duct, said housing and said outer upstream portions of said vanes forming compressed air flow passages, and said housing, said hub and said downstream portions of said vanes forming flow passages for mixing gas fuel and air to cause an energy interchange therebetween whereby the gas fuel and air are moving at similar velocities.

4,483,139

VALVE CONSTRUCTION PARTICULARLY FOR RAM JET ROCKET ENGINES AND TO A RAM JET ROCKET ENGINE CONSTRUCTION

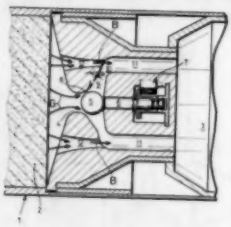
Ernst Engl, Munich, Fed. Rep. of Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Fed. Rep. of Germany

Filed Nov. 12, 1982, Ser. No. 441,100

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1981, 3144936

Int. Cl.³ F02K *9/06*

U.S. Cl. 60—251 **2 Claims**



1. A ram jet nozzle construction including means defining a precombustion chamber (1) having a solid fuel therein, a main combustion chamber (3) spaced from said precombustion chamber and a valve body disposed in the space between said main combustion chamber and said precombustion chamber, said valve body having an upstream end with a central flow aperture (4), a ball (5) adapted to be moved into the aperture to close off the flow, a setting bolt (6) mounted for axial movement behind said ball to move against said ball for positioning said ball in respect to said aperture, means in said valve body defining an annular nozzle (9) extending radially outwardly from said aperture downstream thereof and of said ball, means defining an elbow passage (10) connected to said annular nozzle at a radially outer end thereof, an axial passage (11) connected to said elbow passage extending downstream of said elbow passage, said nozzle having a wall adjacent the aperture disposed at an angle (a) sufficiently large to prevent the locking of said ball therein, and a plurality of bypass nozzles (12) extending from said upstream end into said elbow passage (10), whereby when solids containing hot gases are generated by the solid fuel and pass said aperture and said ball, said ball is pushed radially and assymetrically into said nozzle and caused to rotate so as to avoid desposition of solids on said ball.

4,483,140

EXHAUST GAS CONDUIT SYSTEM FOR MULTI-CYLINDER RECIPROCATING PISTON INTERNAL COMBUSTION ENGINES

Heinz Pluequet, Cologne, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz AG, Cologne, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 225,338, Jan. 15, 1981, , which is a division of Ser. No. 948,438, Oct. 4, 1978, Pat. No. 4,273,080. This application Aug. 4, 1981, Ser. No. 290,015

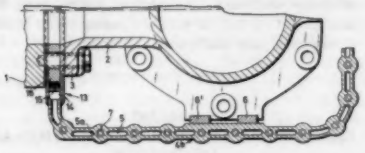
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1977, 2744964

The portion of the term of this patent subsequent to Jun. 16, 1998, has been disclaimed.

Int. Cl.³ F01N *7/06*

U.S. Cl. 60—321 **8 Claims**

1. An exhaust gas conduit system for a multi-cylinder reciprocating piston internal combustion engine having its cylinders arranged in at least one cylinder row and respectively provided with a cylinder head and an exhaust gas conduit, which is connected with internal gas channels in the cylinder head, and water cooled insulating walls respectively surrounding said exhaust gas conduit and supporting items between said insulating walls and said exhaust gas conduit, said insulating walls having water chambers therein which extend in a longitudinal direction thereof and being formed collectively by the sides of said insulating walls and by ribs supporting said sides relative to each other, each insulating wall comprising cover means, a plurality of longitudinal sections provided with con-



necting flanges located adjacent to and connected with each other and outer connecting flanges connected with said cover means forming together therewith water chambers respectively connected to supply and withdrawal conduits for circulating cooling water therethrough.

4,483,141

STIRLING CYCLE ENGINE HAVING SHAFT SEAL MEANS

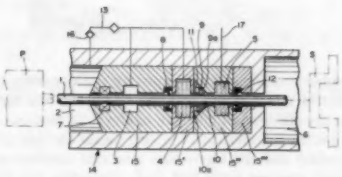
Daisaku Kobayashi; Tsunesaku Itaba, both of Kashiwazaki, and Yutaka Momose, Anjyo, all of Japan, assignors to Kabushiki Kaisha Riken, Tokyo and Aisin Seiki Kabushika, Kariya, both of, Japan

Filed Jul. 28, 1983, Ser. No. 517,915

Claims priority, application Japan, Jul. 31, 1982, 57-116630[U]

Int. Cl.³ F02G *1/00;* **F16J** *15/56*

U.S. Cl. 60—517 **6 Claims**



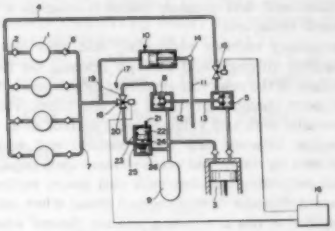
1. A stirling cycle engine including working piston means defining working chamber means, crankshaft means located in crankchamber means, connecting rod means connecting the working chamber means with said crankshaft means, said connecting rod means being passed through intermediate member means, gas seal means provided in said intermediate member means around said connecting rod means, said gas seal means including first oil chamber means and second oil chamber means, said second oil chamber means being located closer to said crankchamber means than said first oil chamber means, resilient sealing ring means disposed between said first and second oil chamber means and having an outer surface tapered toward said crankchamber means to reduce diameter thereof, spring means for biasing said sealing ring means toward said crankchamber means so that said outer surface of the sealing ring means is urged to an opposing surface formed in said intermediate member means, means for introducing into said first oil chamber means a pressure proximity to a minimum pressure produced in said working chamber means, means for opening the second oil chamber means to atmosphere.

4,483,142

OUTPUT CONTROL SYSTEM FOR STIRLING ENGINES

Masura Tsunekawa, Okazaki, and Yoshihiro Naito, Nagoya, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Asahi, Japan

Filed Feb. 15, 1984, Ser. No. 580,249
Claims priority, application Japan, Mar. 10, 1983, 58-38330
Int. Cl.³ F02G 1/06
U.S. Cl. 60—521 **3 Claims**



1. A system for controlling the output from a Stirling engine, comprising;

(a) at least one engine working space;

(b) a compressor;

(c) a highest-cycle-pressure line connecting said working space through a first check valve to said compressor and having a pressure reducing valve, said first check valve allowing a working gas to flow from said working space to said compressor;

(d) a lowest-cycle-pressure line connecting said working space through a second check valve to said compressor and having a booster valve, said first check valve allowing the working gas to flow from said compressor to said working space;

(e) a high-pressure tank connected to said booster valve and said compressor;

(f) a feedback piston cylinder connected to said lowest-cycle-pressure line and having a piston rod;

(g) an accelerator lever having an end supported on said piston rod for selectively actuating said pressure reducing valve and said booster valve;

(h) a two-way unidirectional solenoid-operated valve disposed in said highest-cycle-pressure line upstream of said pressure reducing valve;

(i) a three-way bidirectional solenoid-operated valve disposed in said lowest-cycle-pressure line downstream of said booster valve;

(j) a regulator valve connected between said three-way bidirectional solenoid-operated valve and a downstream port of said booster valve and said high-pressure tank; and

(k) a control unit for controlling said solenoid-operated valves to close said highest-cycle-pressure line and connect said high-pressure tank through said regulator valve to said working space while the engine is being stopped.

4,483,143

INTEGRAL FINNED HEATER AND COOLER FOR STIRLING ENGINES

John A. Corey, North Troy, N.Y., assignor to Mechanical Technology Incorporated, Latham, N.Y.

Filed Sep. 24, 1982, Ser. No. 423,528
Int. Cl.³ F02G 1/04
U.S. Cl. 60—526 **16 Claims**

11. A piston in combination with a cylinder head for use in a Stirling engine and the like comprising:

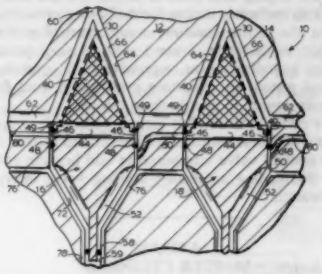
a piston having a conical portion having an exterior surface on which is radially disposed a plurality of vertical fins;

an interior surface defining a piston cavity;

regenerator means disposed in said piston cavity;

passage means between the interior and exterior surface;

a cylinder head having a conical cylinder cavity therein adapted to receive the conical portion of the piston for reciprocal movement therein; and



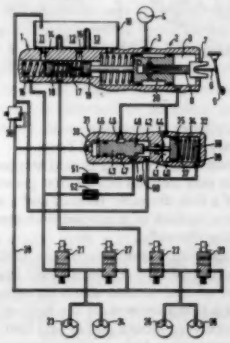
said cylinder cavity having radially disposed thereon a plurality of vertical fins arranged in a mating like fashion with the vertical fins on the conical portions of the piston during operation of the engine.

4,483,144

CONTROL ARRANGEMENT FOR A HYDRAULIC BRAKE SYSTEM WITH AN ANTISKID CONTROL DEVICE

Helmut Steffes, Eschborn, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Aug. 21, 1981, Ser. No. 295,039
Claims priority, application Fed. Rep. of Germany, Oct. 29, 1980, 3040601
Int. Cl.³ B60T 8/02
U.S. Cl. 60—548 **4 Claims**



1. A control arrangement for use in a hydraulic braking system, especially in a vehicular braking system equipped with an antiskid device, between a pressure source, at least one braking circuit leading to at least one wheel brake actuating cylinder, and a return conduit leading to a hydraulic fluid reservoir and including means for creating a pressure in said return conduit,

comprising:

a valve device including a housing defining a bore and a control piston received in said bore for movement axially thereof between a closing and opening position;

means for biasing said control piston toward said closing position including a spring and means for transmitting the force of said spring to said control piston, including an

auxiliary piston having an axial end surface facing away from said spring;

means for causing pressurized hydraulic fluid from the pressure source to act of said end surface of said auxiliary piston upon brake pedal actuation to counteract the action of said spring on said auxiliary piston;

means for urging said control piston toward said opening position, including means for supplying pressure prevailing in the return conduit to said control piston to act thereon in direction toward said opening position and further including means responsive to the opening of said control piston for admitting pressurized fluid from said pressure source to said braking circuit;

wherein said return conduit includes a branch commencing at the wheel brake actuating cylinder and further comprising a control valve interposed in said branch; and

further comprising a pressure-limiting valve interposed in said branch.

4,483,145

MASTER CYLINDER

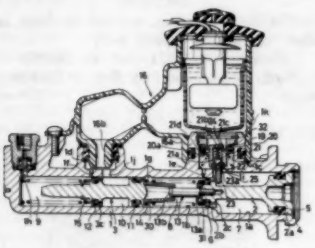
Hiroaki Takeuchi, Aichi; Hiroshi Kawaguchi, Shizuoka; Kiyoshi Nishiwaki, Shizuoka; Fujio Toba, Shizuoka, and Yoshihisa Nomura, Aichi, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Dec. 28, 1981, Ser. No. 335,248

Claims priority, application Japan, Dec. 26, 1980, 55-189217[U]

Int. Cl.³ B60T *11/28*

U.S. Cl. 60—578 **1 Claim**



1. A master cylinder comprising:

a cylinder body having a stepped bore;

a stepped piston slidably fitted in said stepped bore so as to form within said stepped bore a first pressure chamber in a section of a first diameter thereof and a second pressure chamber in a section of a second diameter less than said first diameter thereof;

a reservoir-receiving mouth formed on said cylinder body near the border of said second of said first diameter and said section of said second diameter wherein a through hole opening being formed on the bottom surface of said reservoir-receiving mouth and in said first pressure chamber, a compensation hole opening being formed on the bottom surface of said reservoir-receiving mouth and in said second pressure chamber and an exit opening in said second pressure chamber is formed on said cylinder body;

a cup seal for interrupting communication of said second pressure chamber with said compensation hole when said stepped piston is actuated starting from a return position thereof and which is attached to the piston section of said second diameter of said stepped piston so as to allow fluid to flow from the first pressure chamber into the second pressure chamber through the periphery of said cup seal when the pressure in said first pressure chamber is higher than the pressure in said second pressure chamber;

check valve means including a valve seat having an internal hole formed therein, a resilient member fixed to the valve seat, a valve element having an internal passage therein for exhausting the fluid from said first pressure chamber to said reservoir through said internal passage, relief valve means arranged in said internal passage and normally closing said internal passage and a first spring disposed between said valve element and said bottom surface of said reservoir-receiving mouth so as to seat said valve element on said resilient member;

said relief valve means having a second spring and a ball arranged within said internal passage of said valve element so as to close said internal passage until the pressure within said first pressure chamber reaches a predetermined value; and

a projecting member protruding into said first pressure chamber through said through opening on the bottom surface of the reservoir-receiving mouth and into the first pressure chamber provided for said check valve means coaxially with said valve element thereof so as to form a passage between said valve element and said resilient member by tilting said valve element upon engagement of said projecting member with said piston section of said second diameter of said stepped piston when said stepped piston is at rest at a return position thereof wherein said resilient member further comprises a tapered surface portion engageable with said valve element and a protrusion extending from an inner circumference portion above said tapered surface such that upon return motion of said piston, said valve element pivots about a point of contact with said tapered surface.

4,483,146

SYSTEM FOR CONTROLLING THE SUPERCHARGING PRESSURE OF A TURBOCHARGED INTERNAL COMBUSTION ENGINE HAVING MEANS FOR SENSING CYLINDER PRESSURE

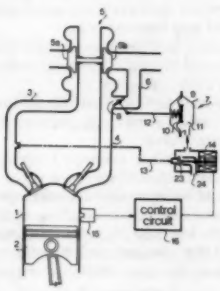
Koji Morikawa, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 2, 1983, Ser. No. 500,512

Claims priority, application Japan, Jun. 9, 1982, 57-98948

Int. Cl.³ F02B *37/12*

U.S. Cl. 60—602 **3 Claims**



1. An improved system for controlling the supercharging pressure of an internal combustion engine having an intake manifold, an exhaust manifold, a turbocharger comprising an exhaust-gas turbine, a bypass for bypassing said exhaust-gas turbine, and a waste gate valve provided in said bypass, wherein the improvement comprising:

actuating means for actuating said waste gate valve;

a pressure sensor for detecting the pressure in one of cylinders of said engine and for producing an electric output voltage dependent on the pressure;

a peak hold circuit for holding a peak voltage of said output voltage of said pressure sensor in one cycle of the operation of said engine;

a comparator for comparing said peak voltage held by said peak hold circuit with a reference value and for producing an output when the peak voltage exceeds the reference value;

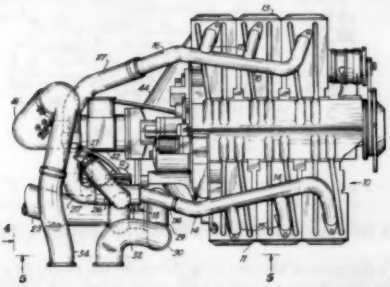
circuit means responsive to said output of said comparator for operating said actuating means, so that said waste gate valve is opened.

4,483,147

TURBOCHARGED ENGINE HAVING AN ENGINE SPEED AND THROTTLE POSITION RESPONSIVE COMPRESSOR BLEED VALVE

Hugh G. Evans, W. 214 6th Ave.; Stephen Speer, S. 358 Couer d'Alene, Apt. 6, and James A. Christy, E. 10918 26th, all of Spokane, Wash. 99204

Filed Apr. 27, 1981, Ser. No. 257,864
Int. Cl.³ F02B *37/12*
U.S. Cl. 60—611 **9 Claims**



1. A combination of a compressor and reciprocating internal combustion engine, the combination designed for use on an aircraft, the package comprising an internal combustion, reciprocating engine having governor means to control and limit the rotational speed of the engine, throttle control means for controlling the operating of the engine, an air inlet manifold, and an exhaust manifold; the compressor having an ambient air inlet, and a compressed air outlet; and air flow connecting means between the compressor outlet and the engine inlet; the improvement comprising a variable overboard bleed valve for compressed air, located along the air flow connecting means intermediate the compressor outlet and engine inlet, and valve controller means for controlling the position of the bleed valve and responsive to changes in the engine operating conditions, the valve controller means comprising sensing means to sense movement of the governor means and of the throttle control means, and means for transmitting the movement of the governor and throttle control means to the valve controller, such that the bleed valve is moved upon the movement of either of the governor or throttle control and in response thereto.

4,483,148

VEHICLE SPEED CONTROL DEVICE FOR USE IN TROLLEY-ASSISTED DUMP TRUCKS OF SINGLE PHASE ALTERNATING CURRENT SYSTEM

Teruo Minami, Kawasaki, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed May 26, 1983, Ser. No. 498,285
Claims priority, application Japan, May 27, 1982, 57-076952
Int. Cl.³ F01B *21/04*
U.S. Cl. 60—698 **1 Claim**

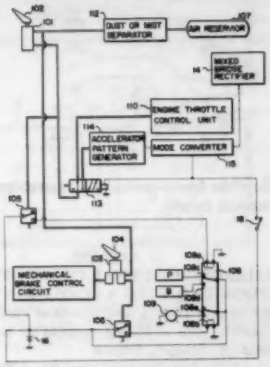
1. A vehicle speed control device for use in trolley-assisted dump trucks of a single phase alternating current, characterized in that it comprises in combination:

(a) an accelerator valve adapted to variably control compressed air from a reservoir in proportion to the amount of depression of an accelerator pedal by the operator;

(b) an engine throttle control means adapted to receive the air pressure controlled by the accelerator valve to thereby control the engine throttle means;

(c) an acceleration pattern generator adapted to receive the air pressure controlled by said accelerator valve and convert the air pressure into a voltage;

(d) a mode converter adapted to receive a voltage signal from the acceleration pattern generator and send out or transmit a voltage pattern to a mixed bridge rectifier installed in a main drive circuit and which comprises thyristors and diodes; and



(e) an engine control solenoid operated valve adapted to be actuated when a trolley mode change-over switch is turned on and occupy a trolley mode position wherein the compressed air controlled by said accelerator valve is directed or supplied into said acceleration pattern generator, said engine control valve being further adapted to be actuated by the resilient force of a spring associated therewith when the trolley mode change-over switch is turned off and occupy an engine mode position wherein the compressed air is directed or supplied into said engine throttle control means.

4,483,149

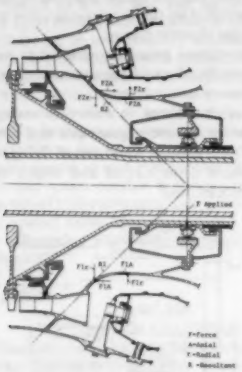
DIFFUSER CASE FOR A GAS TURBINE ENGINE

Gerald R. Rider, Glastonbury, and Willard J. Seibert, Manchester, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed May 20, 1982, Ser. No. 380,460
Int. Cl.³ F02C *7/00*
U.S. Cl. 60—751 **3 Claims**

1. For a gas turbine engine having an outer engine case, a shaft in said case rotatable about the engine's centerline, a roller bearing surrounding and supporting said shaft, a compressor and an annular diffuser for accepting the air discharging from said compressor, means for supporting said bearing and said annular diffuser including a frusto-conical shell member having its base end attached to said engine case and the reduced diameter end attached to said annular diffuser for spacing said annular diffuser radially inwardly away from said engine case, a shell-like member extending from a more radially inward portion of said annular diffuser and extending radially and axially from said frusto-conical shell to form a support for said bearing, the cone angle of said frusto-conical shell being selected so that a line in coincidence with and

extending from the side forming said cone angle intersects said engine's centerline at the midpoint of said bearing whereby the



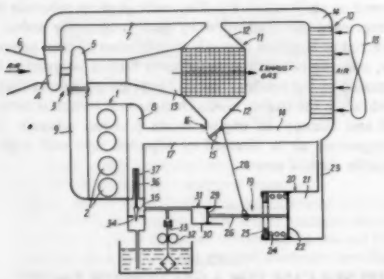
cone angle of the frusto-conical shell maximizes stiffness of said bearing support means.

4,483,150

SUPERCHARGED INTERNAL COMBUSTION ENGINES PROVIDED WITH A COOLING SYSTEM

Jean Melchior, and Thierry Andre, both of Paris, France, assignors to Societe pour le Developpement de la Suralimentation HYPERBAR, Trappes, France

Filed Feb. 28, 1983, Ser. No. 470,568
Int. Cl.³ F02B *29/04*
U.S. Cl. 60—599 **8 Claims**



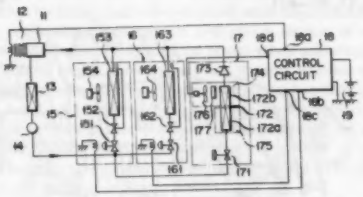
1. In an internal combustion engine having an intake manifold, a turbocharger unit for supercharging the engine and comprising at least one compressor and at least one turbine drivingly connected to said compressor, the engine being provided with a cooling heat exchanger in an air circuit connecting an outlet of the compressor to the intake of the engine and with a regenerator having an air circuit and a gas circuit, which gas circuit communicates on an upstream side with an outlet of the turbine and on a downstream side with the atmosphere, the cooling heat exchanger having an air circuit connected in parallel with the air circuit of the regenerator, and directional valve means disposed at a junction of the two air circuits and adapted to open the air circuit of the regenerator while closing the air circuit of the cooling heat exchanger and vice versa, a control operatively connected to said directional valve means, the control being responsive to the temperature of the air in the intake manifold of the engine and being adapted to put said directional valve means in a position for closing the air circuit of the regenerator as soon as the temperature of the air in said intake manifold exceeds a given temperature threshold; the improvement wherein the cooling heat exchanger is an air-to-air radiator and the control is responsive to the supercharging pressure and adapted to put the directional valve means in the position for opening the air circuit of the regenerator as soon as the supercharging pressure drops below a given threshold pressure.

4,483,151

CAR AIR CONDITIONER WITH A FREEZER/REFRIGERATOR

Kenji Fujioka, Gamagori; Takayuki Morita; Kenichi Fujiwara, both of Kariya, and Kouji Ito, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 15, 1982, Ser. No. 388,661
Claims priority, application Japan, Jun. 16, 1981, 56-93456
Int. Cl.³ G05D *23/19*; F25B *5/00*; B60H *3/04*; F25D *11/02*
U.S. Cl. 62—157 **15 Claims**



1. A car air conditioner with a freezer/refrigerator, comprising:

(a) a compressor adapted to be driven by the engine of a car for compressing gaseous refrigerant under high pressure;

(b) a condenser for cooling the compressed refrigerant and for substantially liquefying the same;

(c) a cooler unit having a first refrigerant line for supplying said unit with the liquefied refrigerant from the condenser;

(d) a first evaporator connected into said first refrigerant line;

(e) fan means for blowing air cooled by said first evaporator into the compartment of a car;

(f) a freezer/refrigerant unit having a second refrigerant line connected in parallel with said first refrigerant line for supplying said freezer/refrigerator unit with the liquefied refrigerant;

(g) a second evaporator connected into said second refrigerant line;

(h) an outer case made of heat-insulative material, housing said second evaporator and having a door;

(i) a refrigerator chamber provided with said outer case, the air in said refrigerator chamber being cooled by said second evaporator;

(j) a freezer chamber provided within said outer case, the air in said freezer chamber being cooled by said second evaporator;

(k) an electrically-controlled valve for controlling the flow of the refrigerant into said first refrigerant line;

(l) first value means disposed in said second refrigerant line upstream of said second evaporator for controlling the flow of the refrigerant thereto, said valve means being closed to supply the refrigerant to said first evaporator when the electrically-controlled valve is open and being opened to supply the refrigerant to said second evaporator when the electrically-controlled valve is closed;

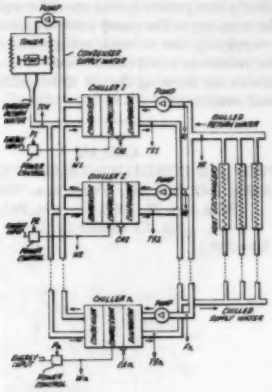
(m) second valve means disposed in said second refrigerant line downstream of said second evaporator for preventing a back flow of the refrigerant from said first refrigerant line to said second refrigerant line; and

(n) a control circuit for opening and closing said electrically-controlled valve to thereby supply the refrigerant alternately to said cooler unit and said freezer/refrigerator unit.

4,483,152
MULTIPLE CHILLER CONTROL METHOD

James M. Bitondo, Seattle, Wash., assignor to Butler Manufacturing Company, Kansas City, Mo.

Filed Jul. 18, 1983, Ser. No. 515,216
Int. Cl.[3] F25B 7/00; F25D 17/02
U.S. Cl. 62—175 14 Claims



1. A method for maintaining at an optimum the overall efficiency of a chilled water system for a building, the system including multiple variable-capacity chillers, said method comprising the steps of:

providing a data base including multiple matrices, each matrix being associated with a chiller of the chilled water system and having stored therein chiller coefficient of performance values at locations that correspond to various values of at least the following parameters also stored in the matrix: the operating capacity of the chiller; and, the total operating capacity for the chilled water system;

determining a new total operating capacity value in response to a request for a chilled water system capacity adjustment;

investigating said data base to determine how said new total operating capacity value can be optimally apportioned among the chillers of the chilled water system by: from said matrices, those chiller coefficient of performance values corresponding to said new total operating capacity value and selecting, from said matrices, the chiller operating capacity values for said selected chiller coefficient of performance values; determining, from said selected chiller operating capacity values, those combinations of chiller operating capacity values that substantially equal said new total operating capacity value; determining, from said selected chiller coefficient of performance values, a system coefficient of performance value for each said combination; selecting that one of said combinations that provides an optimum system coefficient of performance value; and,

adjusting the actual operating capacity of each chiller in accordance with said selected combination.

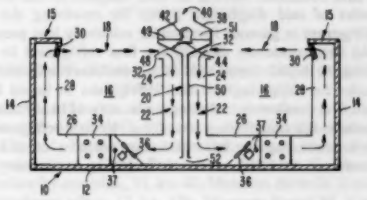
4,483,153
WIDE ISLAND AIR DEFROST REFRIGERATED DISPLAY CASE HAVING A DEFROST-ONLY CENTER PASSAGE

George E. Wallace, Levittown, Pa., assignor to Emhart Industries, Inc., Farmington, Conn.

Continuation-in-part of Ser. No. 463,082, Feb. 2, 1983, Pat. No. 4,439,993. This application Apr. 13, 1983, Ser. No. 484,394
Int. Cl.[3] A47F 3/04; F25D 21/12
U.S. Cl. 62—256 23 Claims

1. In a refrigerated display case of the wide island, air-defrosted type having a pair of side-by-side product wells each of which includes a product display space having an access opening at its top and an air duct that extends about the sides and bottom of the display space and is formed at its end with inlet and outlet openings respectively located at opposite sides of the access opening, each duct including a lower passage extending along the bottom of the display space and inner and outer side passages respectively extending along opposite sides of the display space, the inner side passages of the respective ducts being laterally spaced from each other and being individual to their associated ducts, evaporators in the respective ducts, and primary fan means for circulating air through the ducts, the improvement comprising:

(a) a central partition occupying the space between the inner side passages of the respective ducts, said partition being hollowly formed to provide a defrost air passage that is separate from the respective inner side passages and in which air is quiescent during refrigeration of the case to



define an insulating air space between the inner side passages during refrigeration, said defrost air passage having upper and lower ends, the lower end opening upon and being common to both ducts, said lower end comprising the sole location at which the defrost air passage is in communication with the ducts;

(b) a hollow sill overlying the partition in communication with the upper end of the defrost air passage and with the ambient atmosphere, whereby the sill and defrost air passage combine to provide a flow path limited to the flow of defrost air and extending between the ambient atmosphere and both ducts; and

(c) a defrost fan mounted on the sill, the defrost fan being off during refrigeration cycles of the case and being on during defrost cycles, for transferring air between the ambient atmosphere and both ducts along the flow path through the sill and the defrost air passage, during the defrosting of the case.

4,483,154
REFRIGERATED AIR CONDITIONING SYSTEM USING DIAPHRAGM PUMP

William J. Smeal, 4346 W. Maryland, Glendale, Ariz. 85301

Continuation-in-part of Ser. No. 140,251, Apr. 14, 1980, abandoned. This application Apr. 11, 1983, Ser. No. 483,855
Int. Cl.[3] F28D 5/00; F25B 27/02
U.S. Cl. 62—305 3 Claims

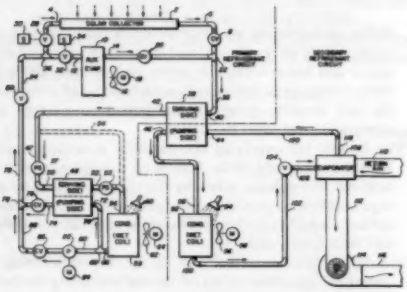
1. A refrigeration system for refrigerating air within an enclosed space, said refrigeration system comprising in combination:

a. a first evaporator having an inlet for receiving a first refrigerant in liquid form, said first evaporator including a plurality of heat exchange surfaces for absorbing heat from the ambient air surrounding the heat exchange surfaces thereof to vaporize the first refrigerant to gaseous form under relatively high pressure, said first evaporator having an outlet for exhausting said first refrigerant in gaseous form;

b. a diaphragm pump having a driving inlet coupled to the outlet of said first evaporator for receiving said first refrigerant in gaseous form under relatively high pressure and having a driving outlet for releasing said first refrigerant

in gaseous form under relatively low pressure, said diaphragm pump having a pump inlet for receiving a second refrigerant in gaseous form under relatively low pressure, said diaphragm pump also having a pump outlet, said diaphragm pump including at least one expansion chamber and at least one compression chamber separated from one another by a deformable diaphragm, said diaphragm pump further including valve means to alternately couple the driving inlet of said diaphragm pump to the expansion chamber for allowing the first refrigerant gas to fill the expansion chamber and thereby compress the second refrigerant and force the second refrigerant from the compression chamber under relatively high pressure outwardly through the pump outlet, while alternately coupling the expansion chamber to the driving outlet to exhaust the first refrigerant gas from the expansion chamber and coupling the compression chamber to the pump inlet to be filled with the second refrigerant gas;

c. a first condenser having an inlet coupled to the driving outlet of said diaphragm pump for receiving the first refrigerant in gaseous form under relatively low pressure, said first condenser causing the first refrigerant to condense to liquid form, said first condenser including an outlet for supplying the first refrigerant in liquid form, said first condenser including a plurality of heat exchange surfaces for transferring heat from the first refrigerant to air surrounding the heat exchange surfaces of said first condenser, said first condenser including an air entry face



through which a stream of air is passed into said first condenser as well as an air exit face opposite thereto;

d. precooler means for causing evaporatively cooled air to pass over the heat exchange surfaces of said first condenser, said precooler means including a fan for drawing a stream of air through the air entry face of said first condenser, said fan being disposed closer to the air exit face of said first condenser than to the air entry face thereof, and a wetted evaporative media disposed proximate to the air entry face of said first condenser for precooling the air stream drawn through said first condenser by said fan and thereby creating a temperature differential between the dry-bulb temperature of the ambient air surrounding said first evaporator and the wet-bulb temperature of the air stream drawn through said first condenser;

e. a motor driven pump having a pump inlet coupled to the outlet of said first condenser for receiving the first refrigerant in liquid form and having a pump outlet coupled to the inlet of said first evaporator, said motor driven pump operating to pump the first refrigerant in liquid form from said first condenser to said first evaporator;

f. a second condenser having an inlet coupled to the pump outlet of said diaphragm pump for receiving said compressed second refrigerant, said second condenser causing the second refrigerant to condense to a liquid form, said second condenser having an outlet for supplying the second refrigerant in liquid form, said second condenser including a plurality of heat exchange surfaces for transferring heat from the second refrigerant to air surrounding the heat exchange surfaces of said second condenser;

g. a second evaporator having an inlet coupled to the outlet of said condenser for receiving said second refrigerant in liquid form, said second evaporator being in heat exchange contact with the air to be refrigerated for evaporating the second refrigerant to a gaseous form under relatively low pressure, said second evaporator having an outlet coupled to the pump inlet of said diaphragm pump for supplying the second refrigerant in gaseous form under relatively low pressure and

h. a blower for blowing the air to be refrigerated over the second evaporator.

4,483,155

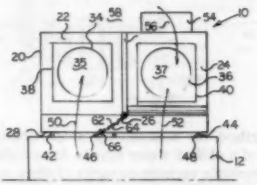
ROOFTOP AIR CONDITIONER CONVERSION UNIT

Jack L. Stiles, P.O. Box 338, Irving, Tex. 75060

Filed Jun. 28, 1982, Ser. No. 392,617

Int. Cl.³ F25D *23/12*

U.S. Cl. 62—259.1 **8 Claims**



1. A plenum unit for adapting roof construction for a prior rooftop air conditioning unit for use with a new air conditioning unit of a type which is different from the prior unit and having a supply air opening and a return air opening wherein the roof construction includes an air supply duct opening, an air return opening and curbing for supporting the prior air conditioning unit, the plenum unit comprising, in combination:

a plenum adapted to mount on the curbing, forming a supply chamber in open communication with the supply duct opening and a return chamber in open communication with the return duct opening;

a partition separating the supply chamber from the return chamber;

an adaptor plate affixed to the plenum forming a supply opening for mating with the supply air opening of the new air conditioning unit and a return opening for mating with the return air opening of the new air conditioning unit wherein the partition extends to near proximity to the adaptor plate between the supply opening and the return opening whereby the return air opening of the new unit is in open communication with the return chamber of the plenum and the supply air opening of the new unit is in open communication with the supply chamber of the plenum; and

equipment support adapted to mount on the roof for supporting the new air conditioning unit to the side of the plenum in a position for mating with the adaptor plate.

4,483,156

BI-DIRECTIONAL VARIABLE SUBCOOLER FOR HEAT PUMPS

Gary L. Oudenhoven, La Crosse, Wis., assignor to The Trane Company, La Crosse, Wis.

Filed Apr. 27, 1984, Ser. No. 604,664

Int. Cl.³ F25B *13/00*

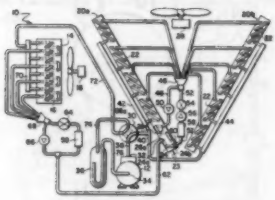
U.S. Cl. 62—324.1 **19 Claims**

1. In a refrigerant heat pump system selectively operable in a heating or cooling mode, said system including a refrigerant compressor, an indoor heat exchanger, an outdoor heat ex-

changer, a reversing valve operable to select the heating or the cooling mode by interchanging the operating function of the indoor and the outdoor heat exchangers as an evaporator and a condenser, and first and second expansion/check valve means associated with the indoor and outdoor heat exchangers respectively, and operative to restrict refrigerant flow in one direction while allowing it in another direction,

an auxiliary heat exchanger disposed with the outdoor heat exchanger, said auxiliary heat exchanger comprising:

a first and a second section joined in serial flow arrangement, with one end of the first section being connected in fluid communication with the first expansion/check valve means, and the other end of the first section connected to



one end of the second section, the serially joined end of the first and second section and the other end of the second section being connected separately to the second expansion/check valve means,

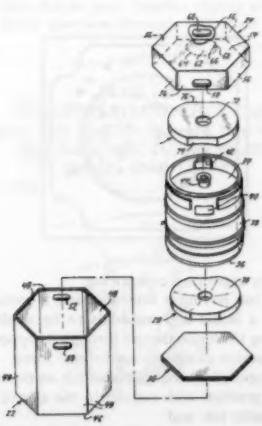
said auxiliary heat exchanger being operative to subcool refrigerant fluid leaving the outdoor heat exchanger during operation of the system in the cooling mode using both the first and second sections, and operative to subcool refrigerant flowing through the second expansion/check valve means and into the outdoor heat exchanger using the first section while storing excess refrigerant in the second section during operation of the system in the heating mode.

4,483,157

COLD PACK FOR BEVERAGE KEG

Robert J. Human, 1808 S. Hanley Rd., St. Louis, Mo. 63144

Filed Dec. 23, 1983, Ser. No. 564,840
Int. Cl.³ B67D 5/62
U.S. Cl. 62—400 **20 Claims**



1. A cold pack for keeping a beverage keg cold during transportation, storage, and use, the keg having a top, a bottom, and sidewalls therebetween and further comprising a valve in the center of the top of the keg, said cold pack comprising:

a container for the keg, of rigid insulating material, having a bottom and sidewalls, the sidewalls closely conforming to the keg to form a thin shell of air between a keg and the container;

a lid for the container, of rigid insulating material, having downwardly depending sides in the same configuration as the container sidewalls, and interfitting therewith in close mating relationship;

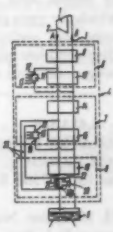
an upper case, having a central hole and filled with a refrigerant substance, on the top of the keg, the upper case sized and shaped to fit on top of the keg, with the keg valve protruding through the central hole in the upper case, and to contact a substantial portion of the top of the keg.

4,483,158

METHOD OF COLD GENERATION AND A PLANT FOR ACCOMPLISHING SAME

Alexei M. Arkharov, Rostovskaya naberezhnaya, 5, kv. 103, Moscow; Alexandr T. Desyatov, ulitsa Textilschikov, 11, kv. 7; Vitaly L. Bondarenko, ulitsa Bykovskogo, 16, kv. 6, both of Moskovskaya oblast, Balashikha; Vladimir G. Pronko, B. Kozlovsky pereulok, 11, kv. 42, Moscow; Boris D. Krakovsky, Narodnaya ulitsa, 13, kv. 136, Moscow; Sergei M. Korsakov-Bogatkov, 5 Parkovaya ulitsa, 56, korpus 6, kv. 74, Moscow; Viktor P. Jushin, Proletarsky prospekt, 64, korpus 1, kv. 72, Moscow; Alexandra M. Kopova, ulitsa 26 Bakinskikh Komissarov, 3, korpus 3, kv. 229, Moscow; Petr V. Gorodnov, 3 Setunsky proezd, 3, kv. 299, Moscow; Julian Y. Borisov, Frunzensky val, 4, kv. 80, Moscow; Vadim V. Ermilov, 7 mikroraion, 21, kv. 29, and Jury P. Romanteev, ulitsa Mirzoiana, 118, kv. 18, both of Alma-Ata, all of U.S.S.R.

Division of Ser. No. 293,126, Aug. 17, 1981, Pat. No. 4,444,019.
This application Feb. 1, 1984, Ser. No. 575,753
Int. Cl.³ F25D 9/00
U.S. Cl. 62—402 **11 Claims**



1. A plant for accomplishing a method of cold generation, comprising: a source of compressed refrigerant; a forward flow line; a return flow line; a cooling system communicated with said source of compressed refrigerant by means of said forward flow line; a consumer of cold, communicated with said cooling system by means of said forward flow line; said consumer of cold, communicated with said source of compressed refrigerant by means of said return flow line passing through said cooling system; said cooling system having at least one refrigerant expansion device which includes, positioned in a chamber communicated with the forward flow line, a gas-jet mechanowave converter connected to said forward flow line and a wave energy converter in wave relationship with the gas-jet mechanowave converter and in energy contact with a circumambient medium whose temperature level exceeds that of the gas-jet mechanowave converter.

4,483,159
YARN FEEDING APPARATUS FOR MULTI-FALL KNITTING MACHINES

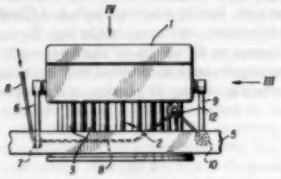
Enzo Cucconi, and Renato Cucconi, both of Carpi, Italy, assignors to Savio & C. S.p.a., Milan and Cucconi Enzo & C. s.n.c., Carpi, both of, Italy

Filed May 11, 1982, Ser. No. 377,013

Claims priority, application Italy, May 29, 1981, 40056 A/81; Oct. 23, 1981, 24661 A/81

Int. Cl.³ D04B *15/48, 15/54*

U.S. Cl. 66—132 T **2 Claims**



1. A yarn feeding apparatus for a knitting machine utilizing a belt and having a rigid support, comprising:

means freely rotatably mounted on said rigid support;

a plurality of spokes distributed in a cylindrical array, coaxial with said freely rotatable means and on a surface arc of which said belt is seated, the height of the belt being less than the height of said spokes;

first and second rocking arms mounted on said rigid support and having eyes for the passage of yarn therethrough wherein said first arm further comprises a yarn inlet arm located adjacent a zone at which said belt comes in contact with said spokes and said second arm further comprises a yarn outlet arm located adjacent a zone at which said belt separates from said spokes;

means for oscillating said first and second arms between a position where each respective eye is displaced at the level of said belt, and a position wherein each of said eyes is displaced laterally of said belt; and

a bracket connected to said support in close proximity to said freely rotatable means, said bracket including an outlet eye through which the yarn passes after passing said freely rotatable means, said outlet eye of said bracket being continuously displaced laterally with respect to said belt under all operating conditions of said apparatus.

4,483,160
DRY CLEANING APPARATUS FOR CLEANING PIECES OF FABRIC

Walter Jost, Gollenstrasse 13, D-7300 Esslingen, Fed. Rep. of Germany

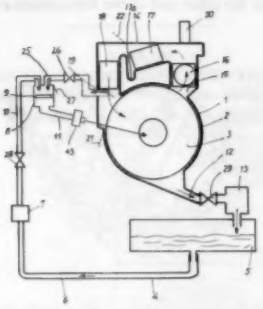
Filed Dec. 14, 1982, Ser. No. 449,797

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1981, 3150015; Oct. 28, 1982, 3239937

Int. Cl.³ D06F *43/08*

U.S. Cl. 68—18 C **13 Claims**

1. A dry cleaning apparatus for washing pieces of fabric in a dry cleaning solvent, comprising: a drum housing; a tumbler drum rotatably supported in said drum housing; a solvent filter unit; solvent circulation means for causing the solvent to flow through said drum and said filter unit; an air cooler; solvent condensate trap means for collecting solvent which condenses in said air cooler; an air heater; air circulation means for causing air to flow through said air cooler, said air heater and said drum, wherein heated air flowing through said drum effects drying of the fabric pieces therein after washing of such fabric pieces in said drum with the solvent, said solvent and air circulation means each having pumping means for respectively causing solvent and air to flow through said drum; means defining a first air duct branching off from said air circulation means at a point downstream from said air heater and running to said filter unit on an inlet side thereof; means defining a second air duct running from an outlet side of said filter unit back to said air circulation means; and means at the inlet side of said filter unit for selectively providing communication between a space within said filter unit and air external to said apparatus; wherein said filter unit includes a housing having openings which communicate with said first air duct, said second air duct, and a pipe which is a part of said solvent circulation means and is located upstream from said filter unit, said second air duct being part of said solvent circulation



means; including a filter cartridge which is placed over said opening which communicates with said second air duct of said solvent circulation means; and wherein said filter unit further includes a driving part and a cover-like connector which can be moved by said driving part between a first position in which it carries fluid from said pipe of said solvent circulation means to said second air duct and seals off said pipe and second air duct with respect to the inside of said filter unit housing, and a second position in which said pipe and said second air duct freely communicate with the inside of said filter unit housing.

4,483,161
WASHING APPARATUS

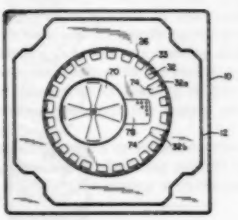
Susumu Oida, Komaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 31, 1981, Ser. No. 336,041

Claims priority, application Japan, Mar. 14, 1981, 56-37071

Int. Cl.³ D06F *23/04*

U.S. Cl. 68—23.6 **7 Claims**



1. A washing apparatus, comprising:

a spinnable tub having a side wall and a bottom wall for receiving a liquid and materials to be washed and for discharging the liquid therein through its upper portion by pumping action caused by centrifugal force;

a pulsator disposed in said spinnable tub on the bottom at an eccentric position with respect to the axis of rotation of said spinnable tub; and

at least one resistance means, said resistance means confined to a region of said spinnable tub which is substantially

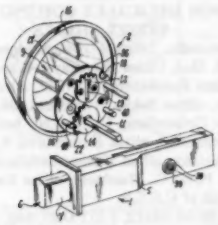
diametrically opposite to said pulsator, for resisting rotation of liquid in said spinnable tub during a spin drying step to effect with the resistance of said pulsator a substantially uniform distribution of liquid rising around the peripheral surface of said spinnable tub, all of said resistive means being asymmetrically disposed relative to the central axis of said spinnable tub.

4,483,162

LOCKING MECHANISM

Gerald F. Dunphy, Glen Waverley, and Hans J. Esser, Keysborough, both of Australia, assignors to Ogden Industries Pty. Ltd., Huntingdale, Australia

Filed May 7, 1982, Ser. No. 376,258
Claims priority, application Australia, May 12, 1981, PE8815
Int. Cl.³ E05B *65/06, 17/04;* E05C *1/06*
U.S. Cl. 70—134 **5 Claims**



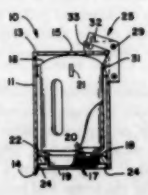
1. An actuator assembly for use with a bolt assembly of the kind having a tubular housing securable to a support, a lever rotatably mounted on said housing and a bolt slidably mounted within said housing and being responsive to rotation of said lever to move between an operative position and an inoperative position; said actuator assembly including a body member securable to said support separate from said housing, an actuator rotatably mounted on said body member, means releasably retaining said actuator in a rest position relative to said body member, a driving gear segment secured to said actuator for rotation therewith, mounting means secured to said body member against movement relative thereto, a driven gear member rotatably mounted on said mounting means, stop means on said mounting means limiting rotation of said driven gear member between two extreme positions, and a drive spindle connected to said driven gear member for rotation therewith and being connectable to said bolt assembly lever to cause rotation thereof, said driving gear segment engaging with and causing rotation of said driven gear member during part only of its rotation in either direction through 360° from said rest position.

4,483,163

GAS SUPPLY TANK LOCK CAP

John L. Carlyle, P.O. Box 377, Mercury, Nev. 89023

Filed Jul. 6, 1982, Ser. No. 395,490
Int. Cl.³ B65D *55/14*
U.S. Cl. 70—165 **3 Claims**



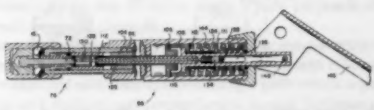
1. A security lock cap unit for gas supply tanks comprising:
a first cylindrical sleeve means having one end closed to form a first cap-like structure and having a slotted aperture in its end which is closed;
a second cylindrical sleeve means having one end closed forming a second cap-like structure, said cylindrical sleeve means having an outside diameter less than the inside diameter of said first cylindrical sleeve means and having a threaded mouth so it can be screwed onto a standard threaded boss of gas supply tanks, said second cylindrical sleeve means being axially received in said first cylindrical sleeve means so it is telescoped in a nested relationship with said first sleeve means with their respective closed ends adjacent to each other and allowing relative rotation therebetween said second cylindrical sleeve means being shorter in axial length than said first cylindrical sleeve means;
retaining means fixed to said first cylindrical sleeve means operable to retain said second cylindrical sleeve means therein in a manner which allows relative rotation between said sleeves means and limits relative axial movement therebetween;
locking means fixedly mounted on said first cylindrical sleeve means, said locking means including two spaced apart flanges fixedly secured to said first cylindrical sleeve means, one flange on each side of the slotted aperture in said first cylindrical sleeve means with said flanges in a parallel disposition, a flat key element disposed between said two flanges and pivotedly connected to said flanges, said key element operable to close the slotted aperture and to engage said second cylindrical sleeve means in a first pivoted position to prevent relative rotation between said sleeve means and to disengage from said second cylindrical sleeve means in a second pivoted position to allow relative rotation between said sleeve means and lock means operable to retain said key element in said second pivoted position whereby the lock cap cannot be removed from a gas cylinder on which it is afttached without releasing of the key element from the lock means and placing it in the first pivoted position.

4,483,164

HIGH SECURITY LOCKS AND KEY

Anker J. Nielsen, Jr., Holden, and Richard E. Hoyt, Worcester, both of Mass., assignors to Omco Inc., Holden, Mass.

Division of Ser. No. 394,446, Jul. 1, 1982, Pat. No. 4,441,343.
This application Jan. 16, 1984, Ser. No. 570,992
Int. Cl.³ E05B *19/12*
U.S. Cl. 70—399 **7 Claims**



1. A high security key comprising:
(a) a hollow cylindrical key barrel having an apertured front end and an apertured rear end;
(b) at least two elongated outer expanding fingers extending longitudinally forward through said key barrel apertured front end, said outer expanding fingers being fixed at their rear portions to an enlarged base which is axially movably mounted within and biased towards said front end of said key barrel, said outer expanding fingers having radially spreadable finger tips;
(c) a hollow key plunger extending longitudinally rearwardly through said key barrel apertured rear end, said key plunger being axially movable within said key barrel, said key plunger positioned to the rear of said expanding fingers enlarged base and having a longitudinally extending transverse slot formed through the intermediate portion of said key plunger;
(d) a hollow cylindrical expander rod having an enlarged

forward head, said expander rod telescopically sliding within said expanding fingers, the length of said expander rod being greater than the length of said expanding fingers, the rear end of said expander rod being fixed to said key plunger;

(e) a key center pin telescopically sliding within said expander rod and biased towards the rear end of said key plunger, the length of said key center pin being greater than the length of said expander rod;

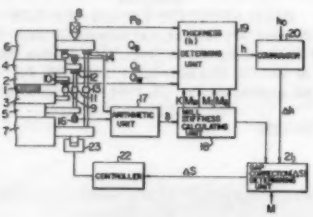
(f) a stop pin extending through said key plunger transverse slot, said stop pin positioned rearwardly of the rear end of said key center pin and positioned perpendicular to the axis of said key barrel, said stop pin being fixed against substantial movement relative to the axis of said key barrel;

(g) a key handle pivoted to the rear end of said key plunger, said key handle being manually pivotable to axially reciprocate said key plunger between a forward locked position in which said expander rod head is positioned forward of said expanding finger tips and said expanding finger tips are unspread, and a rearward unlocked position in which said expander rod is retracted rearwardly to initially spread said forwardly biased expanding fingers, and to subsequently pull said fully spread expanding fingers rearwardly, said stop pin maintaining said rearwardly biased key center pin stationary relative to said key barrel axis, the forward end of said key center pin being positioned forward of the spread finger tips of said expanding fingers in the key plunger rearward unlocked position.

4,483,165
GAUGE CONTROL METHOD AND APPARATUS FOR MULTI-ROLL ROLLING MILL

Kenichi Yasuda, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 17, 1983, Ser. No. 467,330
Claims priority, application Japan, Feb. 19, 1982, 57-24478
Int. Cl.³ B21B *37/00*
U.S. Cl. 72—8 **19 Claims**



1. A gauge control method for a rolling mill of multi-roll type including working rolls and displaceable rolls which can be moved in a first direction in which the working rolls are moved for rolling material and in a second direction different from said first direction, said method comprising the steps of:

determining a coefficient of mill stiffness for the entirety of said rolling mill and coefficients of mill stiffness occurring among the individual rolls in dependence on displacement of said displaceable rolls;

determining on the basis of said coefficients of mill stiffness for the entirety of said rolling mill and occurring among the individual rolls, a rolling load and roll bending forces imparted to the working and displaceable rolls, a roll gap adjustment signal; and

controlling a screw-down device for said rolling mill in accordance with the determined value of said roll gap adjustment signal.

7. A gauge control apparatus for a rolling mill of multi-roll type including displaceable rolls which can be moved in a first direction in which material to be rolled is compressed and in a second direction different from said first direction, and other rolls movable in said first direction, comprising:

first arithmetic means for arithmetically determining a coefficient of mill stiffness of the entirety of said rolling mill, and coefficients of stiffness of the individual ones of said displaceable and other rolls in consideration of the position of said displaceable rolls;

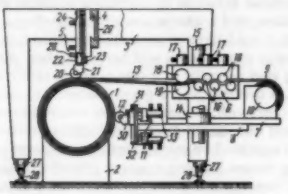
second arithmetic means for arithmetically determining on the basis of said arithmetically determined coefficients of stiffness, and a rolling load and roll bending forces applied to the displaceable and other rolls, a roll gap defined between the ones of said rolls in rolling contact with said material; and

means for controlling rolling reduction for said rolling mill in dependence on said arithmetically determined roll gap.

4,483,166
DEVICE FOR HELICALLY COILING PRESSURE VESSEL SHELLS

Enver R. Khismatulin, Ulitsa 4 Zheleznodorozhnaya, 46b, kv. 16; Marat M. Shel, Ulitsa Kievskaya, 4, kv. 15; Alexandr N. Novikov, Ulitsa Kurchatova, 9, kv. 41, all of Irkutsk; Viktor M. Makarov, ulitsa Sakko i Vantsetti, 58, kv. 35; Petr G. Serov, ulitsa Griboedova, 15, kv. 16, both of Sverdlovsk; Vasily D. Trotsenko, ulitsa Kurchatova, 5, kv. 30, Irkutsk; Sergei I. Nikolsky, ulitsa Kommunisticheskaya, 76, kv. 51, Irkutsk, and Pavel G. Pimshtein, ulitsa Kurchatova, 13, kv. 13, Irkutsk, all of U.S.S.R.

PCT No. PCT/SU80/00212, § 371 Date Aug. 19, 1982, § 102(e) Date Aug. 19, 1982, PCT Pub. No. WO82/02156, PCT Pub. Date Jul. 8, 1982
PCT Filed Dec. 24, 1980, Ser. No. 413,336
Int. Cl.³ B21C *37/06*; B21D *51/02*
U.S. Cl. 72—137 **1 Claim**



1. A device for helical coiling of pressure vessel shells, comprising:

a frame mounted for movement along the axis of a pressure vessel shell;

pressing means mounted on the frame to vertically traverse along a radius of the pressure vessel shell;

means for tensioning a steel strip as it is being uncoiled from a coil, said tensioning means spaced from the pressing means along the direction of run of the steel strip from the coil towards the pressure vessel shell;

said pressing means including a beam carried by the frame and provided with a plurality of forks rotatably carrying rollers, each of which rollers is mounted in its own fork and spaced from an adjacent roller a distance of 10 to 50 times the thickness of the steel strip and situated on the generatrix of the vessel shell across the width of the steel strip;

said steel strip tensioning means including a group of rolls of which a pair of rolls is arranged across the direction of run of the steel strip on opposite sides thereof and have a convex and a concave camber, respectively, facing the surface of the steel strip and of a radius of curvature determined by the thickness and mechanical properties of the steel strip and by the amount of plastic deformation required to compensate for the marginal effect tending to cause the edges of the steel strip to flange outwardly when

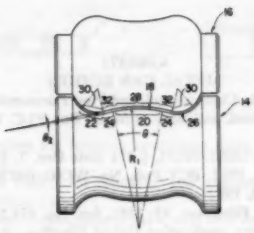
the strip is being coiled onto the vessel shell past the pressing means.

4,483,167

FORMING ROLLS FOR USE IN THE FABRICATION OF WELDED TUBES

Masayuki Hayashi, Toda, Japan, assignor to Kabushiki Kaisha Sanyo Seiki, Saitama, Japan

Filed Jan. 25, 1982, Ser. No. 342,702
Claims priority, application Japan, Jul. 14, 1981, 56-104442
Int. Cl.³ B21D *5/14*; B21B *27/02*; B21H *8/02*
U.S. Cl. 72—179 **2 Claims**



1. In a rolling mill for the manufacture of a welded metal tube, including means for curling opposite edge portions of a skelp in an initial step, and means for forming the curled skelp in the shape of a tube, wherein

said curling means has, as an improvement, means for forming the skelp so that the midportion of the skelp in its lateral direction is convex and opposite sides of the midportion are concave,

said forming means includes a breakdown forming roll set for curling the skelp, comprising:

a first roll having a convex midportion and a pair of concave end portions on opposite sides of the midportion, and

a second roll shaped in complementary relation to the first roll and arranged with its rotational axis laid parallel to the rotational axis of the first roll to define a path for the skelp therebetween,

wherein the first roll further includes a pair of straight border portions, each interposed between its convex midportion and one of its concave end portions and each inclined at an acute angle in relation to the rotational axis of the first roll,

wherein the second roll further includes a pair of straight border portions, each interposed between its concave midportion and one of its convex end portions and each inclined at an acute angle in relation to the rotational axis of the second roll,

wherein the convex midportion of the first roll is arched through an angle ranging from about 16° to about 40°,

wherein the surface length of the convex midportion of the first roll is from about 38% to about 52% of the length of a working surface of the first roll,

wherein the combined surface length of the concave end portions of the first roll is from about 40% to about 45% of the length of the working surface of the first roll,

wherein the combined surface length of the straight border portions of the first roll is from about 8% to about 17% of the length of the working surface of the first roll, all as measured in a direction parallel to the axis of the first roll,

wherein each concave end portion of the first roll is subdivided into at least two segments arched with different radii, the radius of arc of the segment closer to the axial end of the first roll being less than the radius of the arc of the other segment,

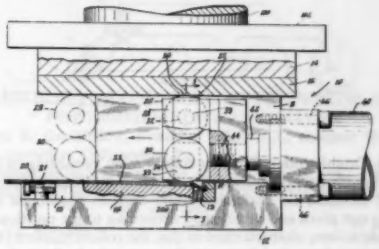
whereby the rise of the end portions and bulging of the midportions are minimized so that the possibility of springback and the development of wavy edges are eliminated.

4,483,168

FORMING APPARATUS

Alden O. Sherman, 85 Weston Rd., Weston, Conn. 06883

Filed Aug. 31, 1982, Ser. No. 413,412
Int. Cl.³ B21H *7/16*; B21B *29/00*
U.S. Cl. 72—220 **22 Claims**



1. Apparatus for forming objects from strips of metal comprising

a base block having a flat, horizontally oriented, planar, upper surface that is adapted to receive a forming die,

a top block assembly that includes a lower member having a flat, horizontally oriented, planar lower surface that is oriented parallel to and above said upper surface of said base block and is moveable as to proximity with respect thereto,

vertically oriented hydraulic press means moveably interconnected with said top block for imparting selected amounts of bias to said top block against it being impelled away from said base block,

a roll assembly positioned between said lower surface of said top block and the upper surface of said bottom block comprising two contacting cylindrical rolls which are oriented with the axes of said rolls parallel to each other and to both said lower surface of said top block and said upper surface of said bottom block and which describe a fictitious plane perpendicular to said surfaces and which are supported by roll support means, said roll assembly means being free to move along a path perpendicular to said fictitious plane,

horizontally oriented hydraulic motion means which acts upon said roll support means for causing said roll support means and said rolls to move along a path which is parallel to said surfaces and perpendicular to said fictitious plane,

and stop block means positioned between said top block assembly and said base block for positionally limiting the proximity of said surfaces with respect to each other to a distance equal to the collective diameters of said two rolls,

whereby a strip of metal forming stock may be positioned above a forming die positioned in said base block and an object of desired configuration and dimensions produced by causing one or more reciprocations of said roll assembly through operation of said motion means while said roll assembly is biased against deflection upward in excess of pre-determined amounts along the path described by said fictitious plane in response to coming into contact with said strip as said assembly reciprocates by means of biasing pressure applied to said top block by means of said press means that is applied thereto in selected amounts which may be increased successively with sequential reciprocations of said roll assembly until reciprocation occurs with said top block positioned in the closest proximity to said base block that is permitted by said stop blocks.

4,483,169
DOUBLE ROLLER GUIDE FOR ROLLING MILLS

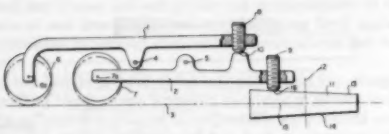
Alfred Jahr, Krefeld, and Wilhelm Svihel, Neusiedl a. See, both of Fed. Rep. of Germany, assignors to Centrol-Morgardshammer GmbH, Krefeld, Fed. Rep. of Germany

Filed Mar. 22, 1983, Ser. No. 477,753

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1982, 8226070

Int. Cl.³ B21B *39/14*

U.S. Cl. 72—250 **10 Claims**



1. Double roller guide for rolling mills, consisting of at least two guide rollers positioned in series in the direction of rolling and mounted on associated roller carriers positioned so that they can pivot and be adjusted according to the position of the guide rollers, characterized in that the rollers carriers (1,2) are two-armed pivoted levers at the one end of which the guide roller (6,7) is mounted and the other end of which is supported on an adjustable stop (10,11), whereby the transmission ratios of both roller carriers (1,2) are equal and the end of one roller carrier (1) is supported on the other roller carrier (2) at a distance from its pivoting axis (5).

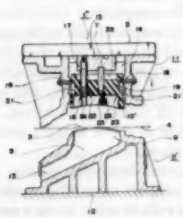
4,483,170
PRESS MACHINE STRUCTURE

Nitsuo Ogawa, Toyota, and Akira Shimizu, Fuzi, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota and Marusun Suruga Kogyosho Co., Ltd., Fuji, both of, Japan

Filed Dec. 16, 1982, Ser. No. 450,431

Int. Cl.³ B21D *28/18, 28/26*

U.S. Cl. 72—327 **2 Claims**



1. A press machine for shaping and punching sheet work comprising:

an upper die having a cavity therein;

a lower die having a punch-receiving aperture therein smaller than and aligned with said cavity, said dies having opposed conforming surfaces about said cavity and said aperture to shape work pressed between said surfaces;

a resilient pad vertically movable in said cavity;

lost-motion means connecting said pad with said upper die;

spring means interposed between said upper die and said pad for urging said pad downward out of said cavity;

a punch disposed in a cavity in the underside of said pad;

means connecting said punch and said pad for urging said punch upward into said pad cavity while permitting limited movement of said punch downward out of said pad cavity; and

lost-motion push means interposed between said upper die and said punch, whereby as said upper die is lowered and the work commences to be defomed between said opposed surfaces said pad contacts the work and presses it against the surface of said lower die peripherally about said aperture, and continued lowering movement of said upper die increases the pressure of said pad on the work and finally clamps the work between said pad and said peripheral surface of said lower die, shapes the work between said opposed conforming surfaces and engages said push means with said punch to punch the work.

4,483,171
METAL CAN BODIES

Jozef T. Franek, Chorleywood, and Paul Porcuznik, St. Albans, both of England, assignors to Metal Box PLC, Reading, England

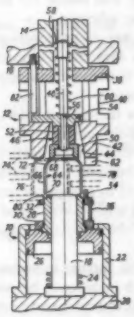
PCT No. PCT/GB82/00111, § 371 Date Dec. 7, 1982, § 102(e) Date Dec. 7, 1982, PCT Pub. No. WO82/03576, PCT Pub. Date Oct. 28, 1982

PCT Filed Apr. 13, 1982, Ser. No. 451,158

Claims priority, application United Kingdom, Apr. 22, 1981, 8112489

Int. Cl.³ B21D *22/00*

U.S. Cl. 72—347 **24 Claims**



1. A method of forming a tapered-wall metal can body by drawing, including the steps of:

(a) producing a metal can body blank comprising a smooth generally cylindrical wall, an integral base at one end of said wall, and a trimmed free rim exposed at the opposite, open end of said wall, said rim being generally normal to said wall;

(b) advancing the can body blank, base first, into a die by means of a punch engaged inside the blank with only the base of said blank, so as to bring the said wall progressively into greater contact with a tapered internal working surface of the die;

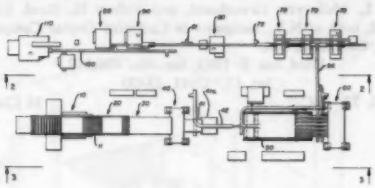
(c) simultaneously with the step (b) applying longitudinal pressure, as well as transverse restraint, to the exposed free rim of the said wall whereby to urge the blank squarely into the tapered die, and maintaining at least that pressure, and restraint, as the blank is advanced progressively further into said tapered die; and

(d) continuing the advancement of said blank by continued advancement of said punch and simultaneous application of said longitudinal pressure, and transverse restraint, to said rim, until the said wall lies uniformly against said working surface of said die throughout a desired longitudinal length of said wall.

4,483,172
SYSTEM AND APPARATUS FOR FORMING CONTAINERS

Joseph D. Bulso, Jr., Canton; Stephen D. Doyle, and James A. McClung, both of North Canton, all of Ohio, assignors to Redicon Corporation, Canton, Ohio

Filed Nov. 26, 1982, Ser. No. 444,789
Int. Cl.³ B21D *22/00*
U.S. Cl. 72—349 10 Claims



1. A system for forming containers from flat metal stock, comprising:

(A) first means for blanking and cupping the stock into individual cups;

(B) second means, connected to said first means, for drawing and redrawing the cups and including

(1) a first inspection and accumulating station,

(2) means for transferring the cups from said first inspection and accumulating station to the press for drawing,

(3) a second inspection and accumulating station for receiving the drawn cups, and

(4) means for transferring the drawn cups from said second inspection and accumulating station to the press for redrawing;

(C) third means, connected to said second means, for trimming the redrawn cups;

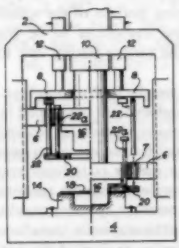
(D) fourth means, connected to said third means, for flanging the redrawn cups; and

(E) fifth means, connected to said fourth means, for beading the flanged and redrawn cups.

4,483,173
DEVICE FOR THE AUTOMATIC REGULATION OF THE PUSH RODS OF A STAMPING PRESS

Gérard Duhamel, Mallemort, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Mar. 22, 1982, Ser. No. 360,842
Claims priority, application France, Apr. 1, 1981, 81 06526
Int. Cl.³ B21D *22/00*
U.S. Cl. 72—351 5 Claims

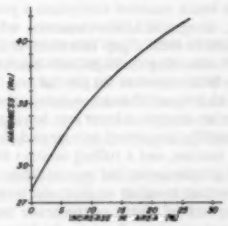


1. A blanking press comprising a table to which is clamped a die, a blank holder located on the table, a main slide moving vertically with respect to the table and to which is clamped a punch, a blank holder slide, at least one blank holder jack for moving the blank holder slide vertically with respect to the table, and push rods fixed by one of their ends to the blank holder and by their other ends to the blank holder slide, said push rods serving to transmit the clamping force of the blank holder slide to the blank holder, hydraulic jacks mounted on the blank holder slide and including jack rods which constitute the push rods, each of said jacks being provided with an automatic locking and unlocking device operable to automatically lock the jack rod in a fixed position when the end of the jack rod abuts the blank holder, and means at said one of the rods for high-speed locking to the blank holder.

4,483,174
METHOD FOR CONTROLLING PROPERTIES OF POWDERED METALS AND ALLOYS

Glenn B. Goodfellow, Franklin Lake, N.J., assignor to UTI Corporation, Collegeville, Pa.

Continuation-in-part of Ser. No. 451,136, Dec. 20, 1982, Pat. No. 4,462,232. This application Dec. 27, 1983, Ser. No. 566,060
Int. Cl.³ B21D *22/00*
U.S. Cl. 72—358 17 Claims



1. A method for increasing strength and/or controlling mechanical properties of powder metals and alloys comprising

(a) consolidating powder to produce a metal specimen with a preshape and dimensions determined on the basis of the desired strength or mechanical properties,

(b) introducing said preshaped specimen into a confined chamber which defines the desired peripheral final shape, spacing at least a portion of the periphery of said preshaped specimen from at least a portion of the walls defining said chamber with the relative dimensions of the spacing being governed by the amount of cold work needed to achieve desired strength or mechanical properties in that portion of the specimen,

(c) engaging one face of said specimen with at least one moveable wall of said chamber and applying a continuous compressive force by said wall with a sufficient magnitude to force the preshaped specimen to deform and fill the chamber at the end of the compressive stroke while simultaneously decreasing length and maintaining the volume of the specimen constant, and

(d) applying said compressive force by moving said moveable wall of the chamber sufficiently slowly so that the yield strength of the specimen progressively increases, and progressively increasing the magnitude of said force as the yield strength increases until the entire circumference of the specimen contacts the walls of the chamber and attains said desired final shape at the end of the compressive stroke of said movable wall.

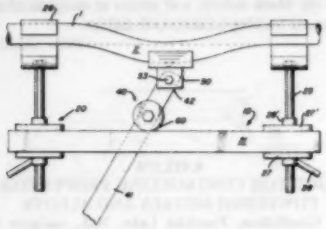
(e) applying steps (c) and (d) in a manner so as to cause buckling of the specimen and produce an article at the end of the compressive stroke which has a predetermined property at a predetermined location.

4,483,175

THIN WALL TUBE STRAIGHTENING APPARATUS

Edward L. Hansen, 79311 Ave. 40, Indio, Calif. 92201

Filed Dec. 17, 1982, Ser. No. 450,698
Int. Cl.³ B21D 31/00
U.S. Cl. 72—389 7 Claims



1. A tube straightening apparatus for performing cold bend, on-site straightening of a tube having a bent tube section, wherein the apparatus comprises:

an adjustable brace member adapted to be secured to the unbent sections of tube in a parallel relationship, wherein the adjustable brace member comprises a pair of parallel, spaced apart, elongated brace elements, which are connected together to form a gap therebetween,

a lever member extending through, and operatively associated with, the brace member for pivotal and lateral rolling movement with respect thereto, wherein the lever member comprises; an elongated lever arm having a straightening block pivotally connected to one end, for contacting the bent tube section, and a rolling contact member rotatably disposed proximate to, but spaced from, said one end, said rolling contact member so that said lever is movable along the longitudinal extent of the brace member; and

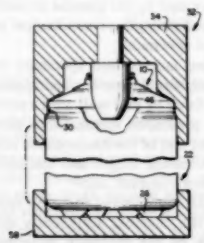
workpiece support members fixed to the brace and located on either side of the lever member.

4,483,176

ASSEMBLY HEAD FOR ASSEMBLING DOMED CAN ENDS WITH CAN BODIES

John Walter, Evergreen Park, Ill., and Charles S. Kubis, Weston, Conn., assignors to The Continental Group, Inc., Stamford, Conn.

Filed Nov. 2, 1981, Ser. No. 317,643
Int. Cl.³ B21D 37/00
U.S. Cl. 72—412 15 Claims



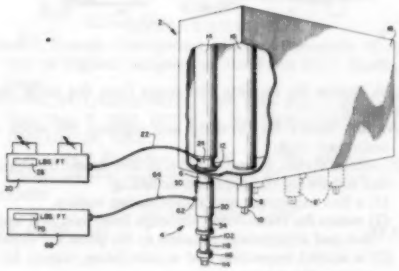
1. An assembly head for assembling a domed can end on a can body wherein the can end has a central opening, said assembly head being generally in the form of a cup including a body and an end wall, said body having an internal peripheral shoulder axially spaced from said end wall and forming stop means for limiting movement of a can end into said assembly head, and centering pin means carried by said end wall and projecting into said body for assuring the centering of a can end in said body, said body axially beyond said stop means being of an enlarged cross section for forming means for receiving a tilted can end.

4,483,177

TRANSDUCER CALIBRATION VERIFICATION FIXTURE FOR MULTIPLE SPINDLE TORQUE UNITS

Roger L. McIntyre, Greenhurst, and Robert H. Reed, Lakewood, both of N.Y., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Jan. 6, 1983, Ser. No. 456,249
Int. Cl.³ G01L 25/00
U.S. Cl. 73—1 C 16 Claims



1. Apparatus for calibrating a torque measuring transducer mounted on a transducer supporting spindle within a machine tool having a plurality of spindles, said apparatus comprising:

(a) support housing means for removably engaging the stationary portion of one of said spindles;

(b) torque applying means for applying a known torque to said spindle, said torque applying means being supported substantially completely within said support housing means and including a master transducer means for measuring the actual amount of torque being applied to said spindle; and

(c) torque releaser means which may be activated manually or automatically to release the torque applied by said torque applying means.

15. A method of calibrating the spindle mounted torque transducers on a multiple spindle machine tool, comprising the steps of:

(a) engaging the upper housing of a torque testing unit on the stationary housing portion of the spindle to be tested;

(b) connecting the transducer to be tested and a master transducer in the torque testing unit to separate readout display units;

(c) activating the spindle motor to tighten a free running test bolt against a captured nut positioned in the torque testing unit until the master transducer readout display indicates that a preselected torque value has been reached.

(d) comparing the master transducer readout display with the machine spindle transducer readout display;

(e) adjusting the machine spindle transducer as required to calibrate the machine spindle transducer;

(f) releasing the torque applied to the test nut and bolt;

(g) repeating steps (c) through (f) as many times as are required to obtain a desired number of torque calibration readings;

(h) removing the torque testing unit from the spindle having the calibrated transducer; and

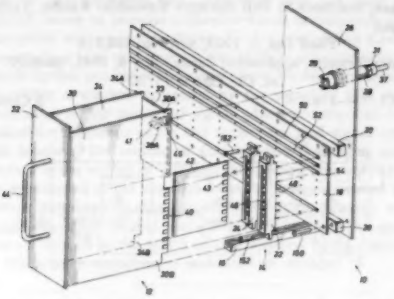
(i) engaging the torque testing unit on the next spindle having a transducer to be calibrated.

4,483,178

PNEUMATIC-DIGITAL CONVERTER SYSTEM AND METHOD

Jerry L. Mille, 1303 Gulf, Pasadena, Tex. 77502

Filed Jan. 18, 1983, Ser. No. 458,913
Int. Cl.³ G01L *15/00, 19/04, 27/00*
U.S. Cl. 73—1 R **8 Claims**



2. A chassis for receiving a plurality pressure monitor lines and a plurality of module assemblies, each said module assembly having a pneumatic module connector, an electrical module connector, and an electronic circuit means interconnected between said pneumatic module connector and said electrical module connector, said chassis comprising:

a face plate;

a plurality of pneumatic connectors carried on said face plate, each providing pneumatic interconnection between a different one of said pneumatic module connectors and a corresponding different one of said pressure monitor lines;

a plurality of electrical connectors carried on said face plate, each providing electrical connection to a different corresponding one of said electronic circuit means; and

a plurality of bus lines carried on said face plate electrically interconnecting different ones of said electronic circuit means when said electrical module connectors of said module assemblies are inserted in respective different ones of said plurality of electrical connectors.

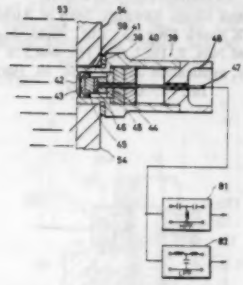
4,483,179

METHOD OF AND DEVICE FOR DETECTION OF KNOCKING FOR INTERNAL COMBUSTION ENGINE

Yujiro Oshima; Kiyokazu Asai, both of Nagoya, and Hiroharu Tokoro, Kariya, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed Dec. 2, 1981, Ser. No. 326,524
Claims priority, application Japan, Dec. 3, 1980, 55-171335; Feb. 27, 1981, 56-27862; Jun. 19, 1981, 56-95592
Int. Cl.³ G01L *23/22*
U.S. Cl. 73—35 **27 Claims**

1. A device for detection of knocking which also acts as a device for detection of abnormal liquid coolant temperature in a liquid-cooled internal combustion engine in which a water jacket is formed outside a cylinder which is forming a combustion chamber and a coolant path provided with a coolant pump is connected to said water jacket comprising a pressure gauge being connected to said water jacket or said coolant path in which the pressure of coolant is made to fluctuate by knocking generated inside said combustion chamber or by the drive of said coolant pump of said coolant path in order to detect the pressure vibration of said coolant, a knocking detecting filter which passes the high frequency component of the vibration due to knocking and cuts off the low frequency component of the vibration due to said water pump and an abnormal coolant detecting filter which passes the low frequency component of the vibration due to said water pump and cuts off the high frequency component of the vibration due to knocking being connected to said pressure gauge which detects the combined vibration of the pressure vibration of high frequency of said



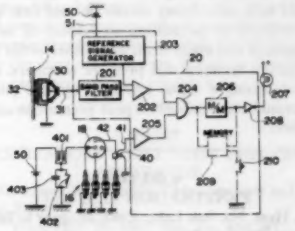
coolant generated by knocking and the pressure vibration of low frequency of said cooling water generated by the drive of said water pump.

4,483,180

METHOD AND DEVICE FOR CHECKING AN OPERATING CONDITION OF AN INTERNAL COMBUSTION ENGINE

Hiroyuki Ohbuchi, Tokyo, and Hideo Sobue, Nagoya, both of Japan, assignors to Nissan Motor Company, Limited, Kanagawa and NGK Spark Plug Co., Ltd., Aichi, both of, Japan

Filed Jan. 29, 1982, Ser. No. 343,818
Claims priority, application Japan, Jan. 30, 1981, 56-13035
Int. Cl.³ G01L *23/22*
U.S. Cl. 73—35 **8 Claims**



1. A device for checking an operating condition of an internal combustion engine comprising:

a vibration sensor releasably attached to the engine cylinder block near one of the engine cylinders and producing a sensor signal representative of the magnitude of engine vibration near said one cylinder;

a detector releasably attached to a cable interconnecting an ignition plug and a distributor and adapted to detect spark ignition in said one cylinder for producing a detector signal in response to the spark ignition;

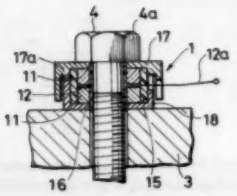
a circuit for discriminating the sensor signal value exceeding a threshold value and producing a discrimination signal when said sensor signal value is above the threshold value;

a gating circuit connected to said discriminating circuit and said detector for producing an indicator signal when both of said discrimination signal and detector signal are simultaneously inputted; and an indicator actuatable for a predetermined period of time in response to said indicator signal.

4,483,181
COMBUSTION PRESSURE PEAK DETECTOR FOR COMBUSTION CONTROL FOR AN INTERNAL COMBUSTION ENGINE

Koji Maekawa, and Shogo Kawajiri, both of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Filed Nov. 9, 1982, Ser. No. 440,376
Claims priority, application Japan, Nov. 10, 1981, 56-179952
Int. Cl.³ G01L 9/08
U.S. Cl. 73—35 **1 Claim**

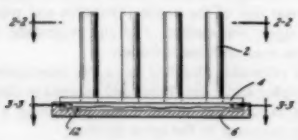


1. In a combustion pressure peak detector for the combustion control of an internal combustion engine of the type having a block and cylinder head defining at least one combustion chamber and having at least one headed bolt adjacent said combustion chamber for securing said cylinder head to said engine block, said combustion pressure peak detector comprising a first metallic cup-shaped pressure member having a central hole therein, an annular plate-shaped ceramic piezo-electric unit disposed in said first pressure member, a second metallic cup-shaped pressure member having a central hole telescopically engaging said first cup-shaped pressure member and disposed in engagement with said piezo-electric unit, said first and second pressure members and said piezo-electric unit surrounding said bolt with one of said pressure members disposed in engagement with said cylinder head and the other of said pressure members being disposed in engagement with the head of said bolt, interfitting means on said first and second pressure members for permitting movement of said pressure members toward and away from each other while preventing relative rotation between said pressure members, and circuit means for detecting a signal provided by said piezo-electric unit to determine the combustion peak pressure in said combustion chamber.

4,483,182
PENETRATION TEST KIT

Norman B. Hess, No. Salt Lake, Utah, assignor to Betz Laboratories, Inc., Trevose, Pa.

Filed Feb. 11, 1982, Ser. No. 348,116
Int. Cl.³ G01N 5/00, 11/00
U.S. Cl. 73—73 **2 Claims**

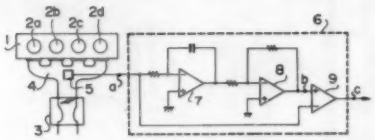


1. A portable apparatus for measuring the wetting efficacy of dust control chemical additives comprising a plurality of dust collection cylinders, each cylinder adapted to retain a dust sample and an additive or control additive, a single support means for supporting said cylinders, said dust collection cylinders being adjacently disposed atop said single support, and a common visual display means interposed between said support and said cylinders for indicating which said additive is the quickest to penetrate the dust and to thereby contact said visual display means.

4,483,183
SYSTEM FOR MEASURING CRANK ANGLE FOR INTERNAL COMBUSTION ENGINE

Hitoshi Suzuki, Niiza, and Tokuro Morozumi, Mitaka, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 3, 1982, Ser. No. 384,815
Claims priority, application Japan, Jun. 4, 1981, 56-86397
Int. Cl.³ G01M 15/00
U.S. Cl. 73—116 **3 Claims**



1. A system for measuring crank angle for an internal combustion engine having an induction passage and exhaust passage comprising:

a pressure sensor responsive to the pressure in one of said passages for generating an output signal;

circuit means for generating pulses by using values periodically occurring in said output signal;

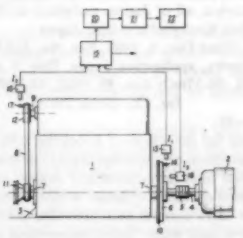
said circuit means comprising a circuit for producing a mean value between the maximum value and the minimum value of said output signal, and

said circuit means further comprises a comparator for comparing said output signal with said mean value for generating said pulses.

4,483,184
AUTOMATIC DIAGNOSTIC DEVICE FOR A FOUR-STROKE-INTERNAL COMBUSTION ENGINE

Wilhelm Kunzfeld, Graz, Austria, assignor to AVL Gesellschaft fur Verbrennungskraftmaschinen und Messtechnik M.B.H. and Prof.Dr.Dr.h.c.Hans List, both of Graz, Austria

Filed May 6, 1983, Ser. No. 492,175
Claims priority, application Austria, May 12, 1982, 1874/82
Int. Cl.³ G01M 15/00
U.S. Cl. 73—117.2 **6 Claims**



1. An automatic diagnostic device for a separately driven, four-stroke-internal combustion engine with a crankshaft and a flywheel mounted thereon, a camshaft driven by said crankshaft and a ring gear on said flywheel for co-action with a starter pinion, said diagnostic device comprising a measuring device for the detection and indication of a specific reference angular position of said crankshaft, said measuring device comprising three impulse transmitters, of which a first impulse transmitter is arranged in the region of said flywheel which in a region thereof co-acting with said first transmitter has an

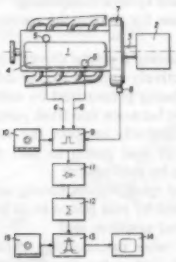
impulse mark in a known angular position relative to said reference angular position to the determined, of which a second impulse transmitter is arranged in the region of a driving pinion mounted on said camshaft which latter is also provided in that region thereof which co-acts with said transmitter with an impulse mark in a known angular position relative to said reference angular position to be determined, and of which a third impulse transmitter is arranged in the region of said ring gear of said flywheel and, co-acting with the gear teeth thereof, issues an impulse sequence which corresponds to the gear pitch, said measuring device further comprising a processor unit to which said impulse transmitters are connected and which further processes the signal issued by said first transmitter within a window triggered by the signal of said second transmitter as the measured signal which corresponds to the looked-for reference angle and suppresses said signal outside said window, the middle of said window having a spacing interval in the region of 720° less the spacing interval between the appearance of the impulses from the first and second transmitters measured in degrees of crank angle relative to the triggering signal of said second transmitter, and the spacing interval as well as the width of said window being controlled by the impulse sequence of said third transmitter.

4,483,185

APPARATUS FOR CHECKING VALVE CLEARANCE OF THE INLET AND EXHAUST OF A PISTON ENGINE

Wilhelm Kunzfeld, Graz, Austria, assignor to Avl Gesellschaft Fur Verbrennungskraftmaschinen Und Messtechnik m.b.H. and Prof.Dr.h.c. Hans List, both of Graz, Austria

Filed May 9, 1983, Ser. No. 492,653
Claims priority, application Austria, May 12, 1982, 1872/82
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—117.2 **10 Claims**



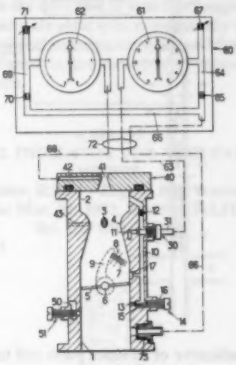
1. An apparatus for checking valve clearance of the inlet and exhaust valves of a piston engine being extraneously driven for the purposes of carrying out the checking operation, said apparatus comprising at least one vibration-pick-up which is applied to the surface of the piston engine at a predetermined point in the region of a valve gear thereof to record solid-borne vibrations, a processor unit, said pick-up being connected to said processor unit and feeding into said unit signals which correspond to solid-borne vibrations occurring at its mounting site, an angle-mark transmitter provided on a crank assembly of said piston engine, said transmitter is connected with said processor unit and in co-operation therewith issues reference signals corresponding to at least one defined angular position of said crank assembly, said processor unit comprises a gate circuit which, triggered by said reference signals of said angle-mark transmitter, is open in respect of the received solid-borne vibration signals at least within a time zone, known from the crank angle diagram of said engine, of one of the two end points of each valve movement, and wherein a limit-value-circuit is provided, which is associated with said processor unit and an indicator unit, said limit-value-circuit, by a comparison of levels with at least one trigger level, provides a "good/bad" information read-out in said indicator unit.

4,483,186

PROCESS FOR CHECKING AND ADJUSTING CARBURETORS IN SITU

Jacques Parei, Chatou, France, assignor to Societe Industrielle de Brevets et d'Etudes S.I.B.E., Nanterre, France

Filed Sep. 20, 1982, Ser. No. 420,350
Claims priority, application France, Sep. 30, 1981, 81 18484
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—118 **4 Claims**



1. A process for assessing wear of relatively movable parts of a carburetor for internal combustion engine in situ, said carburetor having an intake duct, a throttle in said duct, and a idling circuit opening into the intake duct at an idling orifice located downstream of a minimum opening position of the throttle and at a bypass aperture, comprising: operating the engine while maintaining the throttle in a position where said throttle defines, with the intake duct, a predetermined flow cross-sectional area for which, when the carburetor was new, an edge of said throttle was midway of said bypass aperture in the longitudinal direction thereby generating a vacuum in said idling circuit; and comparing said vacuum in the idling circuit with a predetermined reference value which is the value which prevails, under the same operating conditions, in the idling circuit of the same carburetor in new condition.

4,483,187

SURFACE READOUT DRILL STEM TEST CONTROL APPARATUS

Maddock, Jr. Alfred W., Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Dec. 29, 1982, Ser. No. 454,297
Int. Cl.³ E21B *47/00*
U.S. Cl. 73—151 **13 Claims**

1. A control system in a wire line supported tool adapted to be lowered into a well to test for formation flow of oil or gas, an apparatus which comprises:

(a) a wire line adapted to be lowered into a well;

(b) a tool supported on said wire line;

(c) said wire line including a metallic sheath and comprising with said sheath a single center conductor;

(d) electrically powered means connected to said wire line to be furnished electrical power supplied to said tool along said wire line, said electrically powered means being switched under control of a circuit means, said circuit means comprising:

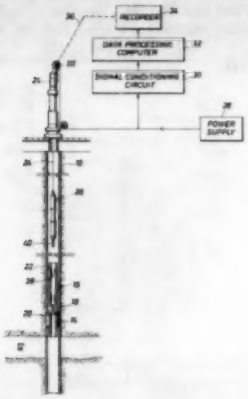
(1) input means connected to said wire line for responding to an input pulse received from said wire line;

(2) reset means connected to said wire line for recognizing a reset pulse transmitted on said wire line and forming a reset pulse;

(3) said reset means forming a reset pulse after said input pulse, said pulses triggering operation of said electri-

cally powered means to operate said tool in the well; and

(4) counter means connected to said input means and said reset means, said counter means forming an output



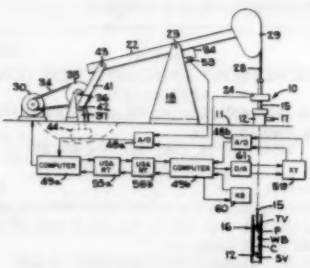
signal indicative of an input pulse and terminating on a reset pulse, said counter means operating to form the output signal thereof for an interval determined by spacing of said input and reset pulses.

4,483,188

METHOD AND APPARATUS FOR RECORDING AND PLAYBACK OF DYNAGRAPHS FOR SUCKER-ROD WELLS

Louis S. McTamaney, Cupertino; Allan B. Delfino, Sunnyvale, both of Calif., and Gary W. Bisbee, Woodlands, Tex., assignors to FMC Corporation, Chicago, Ill.

Filed Apr. 18, 1983, Ser. No. 470,020
Int. Cl.³ E21B *47/00*; H03K *13/22*
U.S. Cl. 73—151 **11 Claims**



1. Apparatus for recording and playback of dynagraphs in a well pumping unit having a deep well pump connected to a sucker-rod string and a power unit to reciprocate said rod string to produce fluid from an underground location, said apparatus comprising:

first transducer means for generating a signal representative of a load on said rod string;

second transducer means for generating a signal representative of a position of said rod string;

means for continuously storing said load signals and said position signals on an endless loop memory during operation of said pumping unit;

means for halting said signal storage upon the occurrence of a fault which causes the shutdown of said pumping unit; and

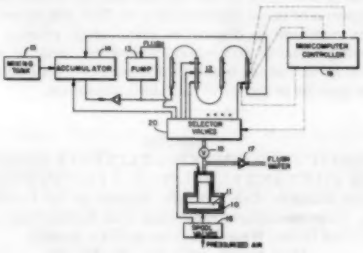
means for using said store load signals and said stored position signals to analyze well conditions using signals stored on said loop memory during a predetermined period of time prior to the occurrence of a fault which caused a shutdown of said pumping unit.

4,483,189

FLUSHING APPARATUS FOR A DRILLING MUD TESTING SYSTEM

Henry Seal, Arlington, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 29, 1983, Ser. No. 518,336
Int. Cl.³ E21B *47/00*
U.S. Cl. 73—155 **7 Claims**



1. A system for testing the parameters of drilling mud with apparatus for periodically flushing said drilling mud from components of said system comprising:

measuring means for testing the parameters of said drilling mud;

a flush pump having a piston driven by a source of pressurized air selectively applied to one side of said piston, said flush water being pressurized by said pressurized air;

a solenoid valve between said flush pump and said measuring means to selectively connect the volume of pressurized flush water in said pump to said measuring means by displacement by said piston;

first and second spool valves having actuating rods respectively operated by said piston in its retracted position and in its displaced position; and

a third spool valve operated by pressurized air supplied through said first valve to set said third valve in one position when said piston is displaced and supplied through said second spool valve to said third spool valve to move it to another position when said piston is displaced;

said source of pressurized air being connected to said one side of said piston during displacement and to the other side of said piston after displacement by said third spool valve.

4,483,190

MUZZLE VELOCIMETER

Paul C. Cornett, Golden Valley, Minn., assignor to FMC Corporation, Chicago, Ill.

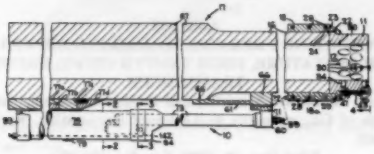
Filed Sep. 24, 1982, Ser. No. 422,765
Int. Cl.³ G01P *3/66*
U.S. Cl. 73—167 **5 Claims**

1. A muzzle velocimeter mounted for use with a portion of a projectile containing magnetic materials and with a gun barrel having a longitudinal bore for the passage of said projectile, said projectile having a nonmagnetic band mounted about at least a portion of said projectile, said velocimeter comprising:

a first and second sensor, each sensor including a magnetic

core having a first and a second magnetic pole and with a coil of wire wound about said core;

means for mounting said magnetic core and sensor in a separate spaced recessed portion of said velocimeter adjacent the muzzle of said gun with one of said magnetic poles adjacent a path taken by said projectile to establish a magnetic field adjacent said bore of said barrel where a movement of said projectile through said magnetic field



generates a first electrical signal in said coil as a front portion of said nonmagnetic band passes through said magnetic field and said magnetic field generates a second electrical signal in said coil as a rear portion of said nonmagnetic band passes through said magnetic field; and

calculator means for using said first and said second electrical signals to determine the velocity of said projectile as it moves through said magnetic field.

4,483,191

AIRSPEED INDICATOR FOR LOW-SPEED CONVEYANCES

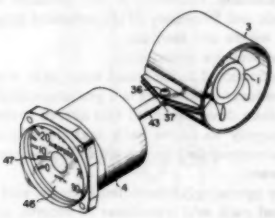
Shuji Nakamura, Komae, Japan, assignor to Tokyo Aircraft Instrument Co., Ltd., Komae, Japan

Filed Oct. 14, 1982, Ser. No. 434,414

Claims priority, application Japan, Aug. 6, 1982, 57-119484[U]

Int. Cl.³ G01C *21/10*

U.S. Cl. 73—187 **11 Claims**



1. An airspeed indicator for low-speed conveyances, comprising:

a receiving and detecting part including

a hollow cylindrical hood having a first longitudinal axis aligned in the direction of movement of said conveyance;

a generator having a drive shaft and output means, said generator being mounted within said hood with its drive shaft extending along said first longitudinal axis; and

a propeller mounted on the drive shaft of said generator, said propeller rotating about said first longitudinal axis;

an indicating part including

a hollow case having a second longitudinal axis;

a scale plate located at one end of said hollow case positioned transverse to said second longitudinal axis, said scale plate being calibrated to indicate airspeed in distance per unit time; and

an ammeter positioned within said hollow case and coupled across the output means of said generator, said ammeter having a pointer adjacent said scale plate for rotation through an angle corresponding to the current through said ammeter and indicating on said scale plate the airspeed of said conveyance; and

a connecting part including

a holding member having one end thereof adjustably secured to said hollow case; and

means adjustably securing the other end of said holding member to said hollow cylindrical hood, the direction of said second longitudinal axis being adjustable with respect to the direction of said first longitudinal axis to permit said scale plate to be conveniently viewed by the operator of said conveyance when said first longitudinal axis is aligned in the direction of movement of said conveyance.

4,483,192

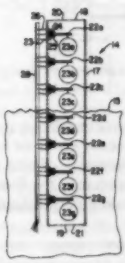
WATER LEVEL INDICATOR FOR NUCLEAR REACTOR VESSEL

William J. Wachter, R.D. 4 - English Rd., Wexford, Pa. 15090

Filed Mar. 24, 1982, Ser. No. 361,513

Int. Cl.³ G01F *23/10*

U.S. Cl. 73—311 **12 Claims**



1. An indicator for level of water in a pressure vessel, said indicator being mounted within the said pressure vessel and comprising a plurality of vertically spaced, horizontal spring members, each secured at one end and connected to a float element at the other unsecured end, said float element having sufficient mass and density to depress the free end of a said spring member when the said float element is in a gaseous medium and having sufficient buoyancy to elevate the said said other unsecured end of a said spring member when the float is in water;

indicating means associated with each of the said spring members for indicating externally of said pressure vessel whether the said other unsecured end of the spring member is in a depressed or elevated position.

4,483,193

MAGNETIC LEVEL INDICATORS

Giulio Bonetti, Garbagnate Milanese, Italy, assignor to Cesare Bonetti S.p.A., Milan, Italy

Filed Aug. 30, 1982, Ser. No. 412,601

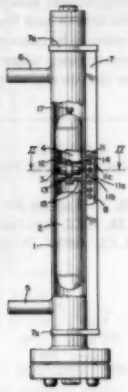
Claims priority, application Italy, Oct. 2, 1981, 24279 A/81

Int. Cl.³ G01F *23/12*

U.S. Cl. 73—313 **6 Claims**

1. In a magnetic level indicator including a float (2) which is free to rise or fall with a liquid within a tube (1) communicating with a receptacle containing said liquid the level of which is to be indicated, the float containing a first permanent magnetic dipole (3) of elongate form located with its longitudinal axis at the level of said liquid in said tube and the indicator including a plurality of rotatable cylinders (8) mounted in a column (7) located adjacent to said tube, a plurality of second permanent magnetic dipoles (11) fixedly located in said cylinders, each of said dipoles each having a magnetization parallel to its longitudinal axis, said cylinders having different colorations when

viewed from different angles and arranged in a line parallel to the axis of the tube and sufficiently close to the axis of the tube to interact with said magnetic dipole in the float, the axis of rotation of each of the second permanent magnetic dipoles being perpendicular to said longitudinal axis of said float, the improvement consisting of mounting the first permanent mag-



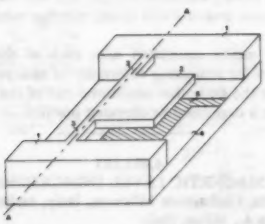
netic dipole on wall means extending transverely (3) within the float and rotatably on means about an axis (4) parallel to the axis of the tube, the orientation of said first permanent magnetic dipole being independent of the float, with the elongation of said first dipole extending perpendicular to its axis of rotation.

4,483,194

ACCELEROMETER

Felix Rudolf, Cortaillod, Switzerland, assignor to Centre Electronique Horloger S.A., Switzerland

Filed Jun. 24, 1982, Ser. No. 391,672
Claims priority, application Switzerland, Jul. 2, 1981, 4361/81
Int. Cl.³ G01P *15/125*
U.S. Cl. 73—517 R **12 Claims**



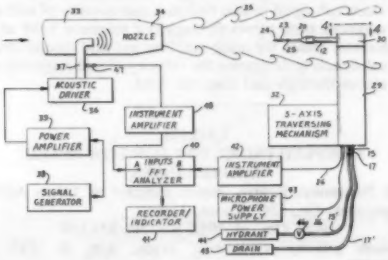
1. An integrated semiconductor accelerometer comprising:
a semiconductor carrier substrate defining a plane;
a semiconductor flap member
only two resilient attachment means coupled to said substrate in opposed and coaxial relationship for mounting said flap for rotation about only one axis, said attachment means providing rotation of said flap member about said one axis in response to an acceleration perpendicular to said plane and causing a return torque to be applied to said flap member, said substrate, said flap member and said attachment means being formed of a single thin piece of monocrystalline silicon with said flap and said attachment means being heavily doped with boron creating longitudinal stresses on the flap attachment means which thus rigidly resist movements of the flap member other than movements about said one axis,
at least one electrode disposed facing said flap member in a plane parallel to the plane defined by said substrate; and
means for producing a signal which is a function of the distance between said flap member and said electrode and represents acceleration to which said flap member is subjected.

4,483,195

FLUCTUATING PRESSURE MEASURING APPARATUS WITH MINIATURE, HIGH TEMPERATURE, PRESSURE TRANSDUCER

William H. Brown, Marietta, and Krishan K. Ahuja, Atlanta, both of Ga., assignors to Lockheed Corporation, Burbank, Calif.

Filed Dec. 28, 1982, Ser. No. 454,002
Int. Cl.³ G01L *11/00, 23/00*
U.S. Cl. 73—702 **11 Claims**



1. An apparatus for measuring fluctuating hydrodynamic pressures in a high temperature flowing medium comprising:
a signal generator operative in said medium to alter the magnitude and frequency of the coherent large-scale turbulence within said medium;
at least one pressure transducer;
a support connected to each said transducer whereby each said transducer is mounted in a predetermined position in said medium downstream of said altered turbulence:
a power supply to excite each said transducer whereby signals corresponding to the altered turbulence aforesaid are detected;
an analyzer operatively connected between said signal generator and each said transducer to receive and compare the signals therefrom; and
an indicator connected to the output side of said analyzer to display the results thereof

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4,483,196

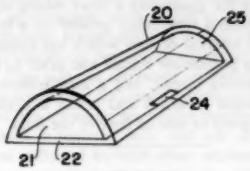
TUBULAR TRANSDUCER STRUCTURES

Anthony D. Kurtz, Englewood; Joseph R. Mallon, Jr., Franklin Lakes, and Timothy A. Nunn, Ridgewood, all of N.J., assignors to Kulite Semiconductor Products, Inc., Ridgefield, N.J.

Filed Mar. 7, 1983, Ser. No. 472,851
Int. Cl.³ G01L *9/06*
U.S. Cl. 73—730 **19 Claims**

1. A pressure transducer apparatus, comprising:
a longitudinal tubular insulator member having an inlet and outlet port for enabling a pressure conducting fluid to propagate therethrough, said tubular member having at least one elongated flat surface area of a thickness substantially less than the thickness of the remaining surface area with said flat surface area adapted to deflect according to pressure variations in said medium, and a pressure sensor array positioned on said flat surface area on the side not in contact with said fluid medium wherein said longitudinal

tubular member is of a "D" shaped cross section, with the arcuate portion of said "D" being substantially thicker



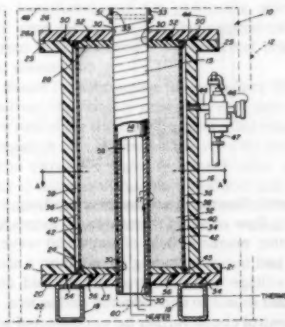
than the base portion with said base portion being said flat surface area.

4,483,197

SOIL STRESS TEST APPARATUS

Jordan D. Kellner, Wayland, Mass., assignor to The Kendall Company, Boston, Mass.

Filed Sep. 30, 1982, Ser. No. 430,535
Int. Cl.³ G01B *5/00*
U.S. Cl. 73—784 **27 Claims**



1. An apparatus for simulating and applying the effects of inground soil stress forces, under varying operating temperatures, upon a movable test pipe segment and adherent protective coating, comprising:

a test apparatus housing means;

an opening for centrally disposing a test pipe segment within said test apparatus housing means;

a test pipe segment movement means;

a soil reservoir located in said test apparatus housing means;

said soil reservoir being in close contiguous contact with and surrounding said test pipe segment;

a soil reservoir containing means;

said soil reservoir containing means surrounding said soil reservoir;

a gas pressure means surrounding said soil reservoir containing means;

said gas pressure means exerting variable gas pressures on said soil reservoir, with induced soil pressure forces in turn being transmitted to said test pipe segment;

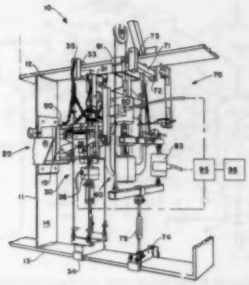
said test pipe segment movement means simultaneously providing movement to said test pipe segment during impingement by said soil reservoir.

4,483,198

OSTEOCLAST FOR WHOLE BONE TESTING

Howard W. Smith, Lawrence, Kans., and Carl R. Kulp, Jr., West Chester, Pa., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 5, 1983, Ser. No. 455,673
Int. Cl.³ G01N *3/00*
U.S. Cl. 73—794 **3 Claims**



1. A test device configured to simultaneously apply bending and torsion loads to a test specimen, which comprises:

a. a substantially rigid support frame comprising upper and lower support beams and a pair of upright lateral support beams;

b. a first support pivotally mounted to one said lateral support beam for supporting a first end of said test specimen;

c. a second support mounted between said upper and lower beams for pivotally supporting the second end of said test specimen, said second support being rotatable about an axis through said first and second supports;

d. torsion loading means, supported between said upper and lower beams and operatively connected to said second support, for applying torque to said specimen by rotation of said second support about said axis; and

e. transverse loading means, supported between said upper and lower beams and intermediate said supports, for applying a load to said test specimen at a predetermined location therealong in a direction substantially perpendicular to said axis.

4,483,199

METHOD OF MEASURING SOLID MATTER MASS FLOW

Norbert Beiermann, Brand-Erbisdorf; Manfred Scheller, Freiberg; Horst Kretschmer, Freiberg; Jürgen Noack, Freiberg; Klaus-Dieter Blaschke, Freiberg; Lothar Heinz, Oederan; Peter Göhler; Hans-Joachim Schweigel, both of Freiberg; Hanshans-Heinrich Deicke, Leipzig; Klaus-Peter Rudolph, Leipzig, and Johannes Flachowsky, Leipzig, all of German Democratic Rep., assignors to Brennstofflinstitut Freiberg, Freiberg, German Democratic Rep.

Filed Sep. 20, 1982, Ser. No. 421,115
Claims priority, application German Democratic Rep., Sep. 22, 1981, 233471
Int. Cl.³ G01F *1/70, 1/74*
U.S. Cl. 73—861.04 **17 Claims**

1. A method of measuring a solid matter mass flow during conveying of solid matter-gas suspension in conduits, particularly during conveying in a dense stream at high pressure, comprising the steps of

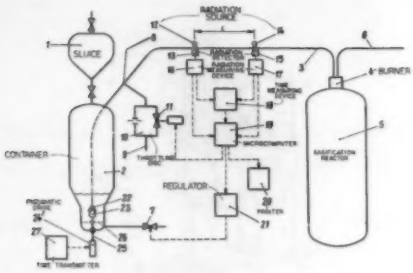
changing in a pulse mode a solid matter concentration of a solid matter-gas suspension at one location of a conduit through which the suspension flows;

continuously measuring a solid matter concentration of the solid matter gas suspension or a value corresponding

thereto at two measuring locations downstream of the first mentioned changing location and spaced from one another in the conduit;

determining a difference in time at which a difference of the solid matter concentration or the corresponding value is indicated after one another at the measuring locations downstream of the changing location and spaced from one another;

determining a per unit time average value of the solid matter



concentration of the solid matter-gas suspension in the conduit portion corrresponding to the measuring locations;

producing a signal which is proportional to a quotient from the time per unit average value of the solid matter concentration divided by the difference in time at which the change of the solid matter concentration at the measuring locations after one another is indicated; and

using this signal as a measure for the solid matter mass stream in the conduit.

4,483,200

THERMAL PULSE FLOWMETER

Tatsuo Togawa, Hino; Tetsu Nemoto, Suginami, and Hirohisa Tsubakimoto, Chofu, all of Japan, assignors to Anima Corporation, Tokyo, Japan

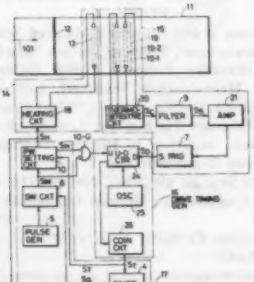
PCT No. PCT/JP82/00017, § 371 Date Sep. 9, 1982, § 102(e) Date Sep. 9, 1982, PCT Pub. No. WO82/02591, PCT Pub. Date Aug. 5, 1982

PCT Filed Jan. 18, 1982, Ser. No. 422,975

Claims priority, application Japan, Jan. 19, 1981, 56-6836; Jun. 10, 1981, 56-86144[U]

Int. Cl.³ G01F *1/68*

U.S. Cl. 73—861.05 **16 Claims**



1. A thermal pulse flowmeter comprising a pipe for passage therethrough of a fluid to be measured, a heater disposed in said pipe for heating the fluid, a heater circuit for pulsatively heating said heater, a detector disposed in said pipe downstream of said heater with respect to the direction of flow of the fluid and responsive to a change in the temperature of the fluid, a thermosensitive circuit for detecting passage of a heated portion of the fluid across said detector, a drive timing signal generator for generating a drive timing signal for said heater circuit with a time delay greater by a multiple of an integer than an interval of time which has elapsed after said heater has been pulsatively heated and prior to detection by said thermosensitive circuit, and a measurement circuit for measuring a period at which said heater is heated to derive therefrom the speed or rate of flow of the fluid.

4,483,201

MAGNETIC-INDUCTIVE FLOWMETER

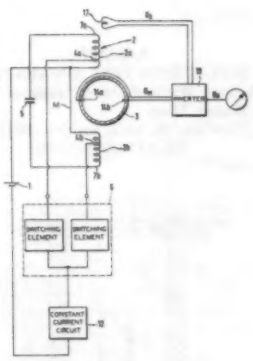
Peter Haug, Schelmenwasenstrasse 35, 7060 Schorndorf-Haubersbronn, Fed. Rep. of Germany

Filed Aug. 2, 1982, Ser. No. 404,550

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1981, 3133330

Int. Cl.³ G01F *1/60*

U.S. Cl. 73—861.12 **13 Claims**



1. Magnetic flowmeter apparatus comprising a pipe adapted to receive a flow of liquid therethrough, means for generating an alternating magnetic field of sinusoidal wave form within said pipe; said means including an inductor, a source of unidirectional voltage and a control circuit; said control circuit coupling said source to said inductor; said source, said inductor and said control circuit further being connected as an oscillator which serves in generating a current of sine wave form for said inductor to produce said field, said inductor being in the form of an excitation coil and which serves in determining the frequency of said oscillator, and means for measuring the voltage induced by said field within the liquid flowing through said pipe.

4,483,202

ULTRASONIC FLOWMETER

Ichiro Ogura, and Ayao Itoh, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 29, 1983, Ser. No. 479,901

Claims priority, application Japan, Mar. 29, 1982, 57-48857

Int. Cl.³ G01F *1/66*

U.S. Cl. 73—861.27 **3 Claims**

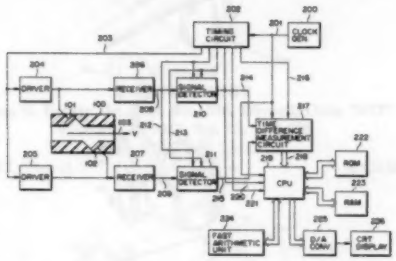
1. An ultrasonic flowmeter, comprising:

a conduit through which a fluid flows;

a pair of ultrasonic transducers disposed in said conduit so as to oppose each other such that a line connecting said pair of ultrasonic transducers is inclined by a predetermined angle with respect to a fluid flowing direction;

driving means for simultaneously driving said pair of ultrasonic transducers;

time difference measuring means for measuring a primary time difference between a time measured when one ultrasonic transducer of said pair of ultrasonic transducers receives an ultrasonic wave which is radiated from the other ultrasonic transducer and a time measured when said other transducer receives an ultrasonic wave which is radiated from said one ultrasonic transducer, for measuring a secondary time difference between a time measured when said one ultrasonic transducer receives an ultrasonic wave which is radiated from said one ultrasonic transducer and reflected by said other ultrasonic transducer and a time measured when said other ultrasonic transducer receives an ultrasonic wave which is radiated from said other ultrasonic transducer and reflected by said one ultrasonic transducer, and for producing primary and secondary time difference data by respectively adding signs thereto in accordance with an arrival order of the ultrasonic waves; and



calculating means for subtracting the secondary time difference data from the primary time difference data to calculate a flow rate of the fluid using a subtracted result as data of a propagation time difference between the propagation time of the ultrasonic wave from said other ultrasonic transducer to said one ultrasonic transducer and the propagation time of the ultrasonic wave from said one ultrasonic transducer to said other ultrasonic transducer.

4,483,203

MULTI-AXIS FORCE TRANSDUCER

Harry M. Capper, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 2, 1983, Ser. No. 500,495
Int. Cl.³ G01L *5/16*
U.S. Cl. 73—862.04 **17 Claims**

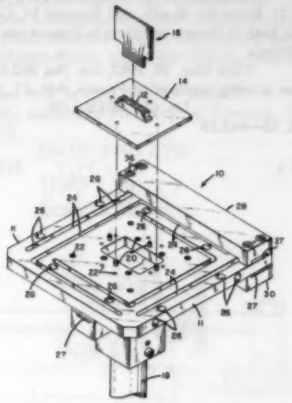
1. A multi-axis force transducer, comprising:

a body having four sides and a top and a bottom portion;

a plurality of U-shaped apertures disposed in said body, wherein said U-shaped apertures are disposed with respect to each other so as to be nested within each other, thereby defining a beam portion adjacent to the legs of said U-shaped apertures;

a plurality of strain gage mounting apertures disposed in said beam portions; and

at least one strain gage disposed inside each of said strain gage mounting apertures so as to measure tension or compression experienced by the associated beam in one axis only.

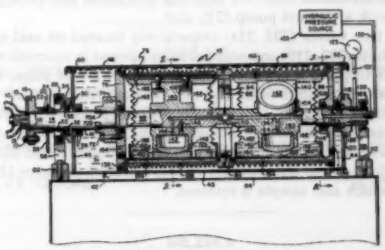


4,483,204

PRONY BRAKE DYNAMOMETER

Arthur J. Warsaw, 131 E. Main St., Colfax, Ill. 61728

Filed Dec. 27, 1982, Ser. No. 453,299
Int. Cl.³ G01L *3/16*
U.S. Cl. 73—862.12 **13 Claims**



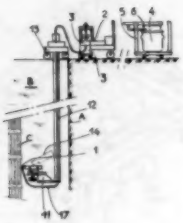
13. In a dynamometer for measuring the power output of a prime mover driving a rotating closed cylindrical drum by means of a rotating shaft coupled thereto and aligned therewith in a housing containing a liquid for dissipating heat produced by the frictional engagement of said drum by a plurality of brake means securely mounted within said drum so as to engage an inner lateral surface of said drum aligned along the axis of said rotating shaft, the improvement comprising: a closed lubrication system within said drum including first and second partitions defining a space therebetween and positioned immediately adjacent one of said brake means for confinging a lubricant therebetween, each of said partitions including an aperture therein for providing for the flow of said lubricant from between said partitions and onto said one of said brake means and rotating drum whereby said lubricant is circulated between said drum and the remaining brake means and returned to the space between said partitions in circulating fashion by the rotation of said drum.

4,483,205

APPARATUS FOR REMOVING DEPOSITS FROM IRRADIATED FUEL ELEMENTS

Hubert G. Bellaiche, Ecully, and Bernard M. Gebelin, Villeurbanne, both of France, assignors to Framatome & Cie, Courbevoie, France

Filed Mar. 29, 1982, Ser. No. 362,822
Claims priority, application France, Apr. 17, 1981, 81 07838
Int. Cl.³ G01N *1/08*
U.S. Cl. 73—863.23 **9 Claims**



1. Apparatus for removing deposits from nuclear reactor fuel elements (C) located in a pool (A), comprising

(a) scraping means (**15**) located at the end of a vertical arm (**12**) penetrating into the interior of said pool and arranged for remote-controlled manipulation on a support (**13**) displaceable above said pool;

(b) a suction duct (**17**) debouching at one of its ends adjacent to said scraping means (**15**) and at the other of its ends into an intermediate reservoir (**20**);

(c) a filtration chamber (**3**) detachably arranged beneath said intermediate reservoir (**20**) and connected upwardly to the lower portion of the latter by a draining conduit (**38**), and downwardly to a buffer reservoir (**21**) by a discharge pipe for filtered liquid;

(d) two conduits (**203, 210**) respectively connecting said intermediate reservoir (**20**) and said buffer reservoir (**21**) with a vacuum pump (**22**); and

(e) two valves (**233, 211**) respectively located on said conduits (**203, 210**) and adapted to be opened in succession so as to place said vacuum pump (**22**), in a first stage, into communication with said intermediate reservoir (**20**) for filling the latter with liquid containing a removed deposit sample, and then, in a second stage, into communication with said buffer reservoir (**21**) for filtration of said liquid, through the intermediary of said filtration chamber (**3**) in which said sample is retained.

4,483,206

REACTOR CATALYST REMOVAL VALVE

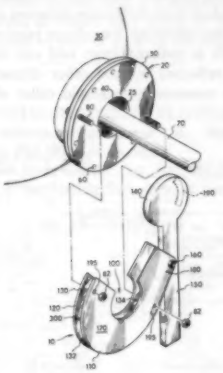
Timothy J. Thompson, Detroit, Mich., assignor to Marathon Oil Company, Findlay, Ohio

Filed Nov. 22, 1982, Ser. No. 443,408
Int. Cl.³ G01N *1/10*; F16K *1/20*
U.S. Cl. 73—863.85 **4 Claims**

1. A pivotal valve (**10**) for selective attachment to a nozzle (**20**) of a container (**30**) having a pipe (**70**) installed through a nozzle hole (**25**) of said nozzle (**20**) into solid particulate material (**40**) found in the container (**30**), said pivotal valve (**10**) comprising:

outer and inner flange plates (**110, 120**), each of said flange plates having a first substantially annular area (**170**) with an outer diameter (**400**) corresponding to the outer diameter of a nozzle and an inner diameter (**410**) corresponding to the diameter of a nozzle hole and a second area (**180**) having an outer portion extending beyond said outer diameter and an inner portion continuing and corresponding to the diameter of a nozzle hole, said first and second areas (**170, 180**) forming a substantially opened-C area (**100**) having an opening greater than the diameter of a pipe (**70**),

a plurality of spacers (**130, 132, 134**) firmly attached between outer and inner flange plates (**110, 120**) to hold said plates a predetermined distance apart and to provide formed open regions (**300, 302**) between said spacers (**130, 132, 134**), said open regions (**300, 302**) being large enough to permit the passage of solid particulate material,



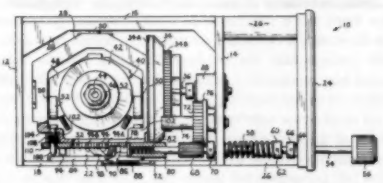
a circular gate (**140**) with an outwardly extending handle (**150**) pivotally attached between said plates (**110, 120**) for selectively opening and closing a nozzle hole when said plates (**110, 120**) are mounted to a nozzle, and means (**80, 82**) for selectively attaching said plates (**110, 120**) to a nozzle.

4,483,207

CAGING MECHANISM FOR GYROSCOPES

James N. Harrington, 16633 W. 145th Ter., Olathe, Kans. 66062

Filed Jun. 1, 1981, Ser. No. 268,902
Int. Cl.³ G01C *19/26, 19/30*
U.S. Cl. 74—5.14 **18 Claims**



1. In a gyroscope having a frame and inner and outer gimbals mounted for rotation about mutually perpendicular axes, and improved caging mechanism comprising:

an elongate rod supported on the frame for axial movement and having one end accessible to effect axial movement of rod;

a caging disc supported on the frame to turn and to move generally linearly toward and away from the inner gimbal, said rod engaging said disc in a manner to effect turning movement thereof when the rod is moved toward the disc;

a ramp member on said frame presenting a ramp surface which interacts with a cooperating surface of said disc in a manner to effect linear movement of the disc toward the inner gimbal in response to turning of the disc;

a pin element supported for generally axial movement toward and away from the inner gimbal, said pin element having one end thereof contacted by said disc in a manner

to force the pin element toward the inner gimbal in response to movement of the disc toward the inner gimbal;

cooperating cam means on said pin element and inner gimbal for effecting rotation of the inner gimbal to a predetermined orientation in response to movement of said pin element toward the inner gimbal, thereby caging the inner gimbal; and

releasable detent means for holding the caging disc away from the inner gimbal in a non-caging position.

4,483,208

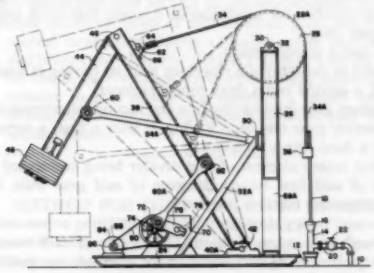
PUMPING UNIT

Thomas N. Parker, Jr., P.O. Box 356, Boswell, Okla. 74727

Filed Jul. 2, 1982, Ser. No. 394,505

Int. Cl.³ F16H *21/32*

U.S. Cl. 74—41 **8 Claims**



1. A pumping unit comprising:

a horizontal base for supporting on the earth;

an upright sampson post having the lower end secured to said base;

a drum rotatably supported to the top of said sampson post;

a gearbox secured to said base and spaced from said sampson post, the gearbox having a horizontal driveshaft extending therefrom;

a crank arm having the inner end affixed to and rotated by said drive shaft in a vertical plane;

a lever arm having the lower end pivotally supported to said base at a position between said gearbox and said sampson post, the lever arm being pivotal in a vertical plane, the outer end of arm being pivotally attached by means of a pitman to said lever arm intermediate its upper and lower end;

a cable extending over said drum and having one end affixed to said lever arm and the other end attachable to a vertically reciprocal pumping element, such as a polish rod;

a weight arm having a first end pivotally affixed to said lever arm, the weight arm being pivotal in a vertical plane relative to said lever arm;

a stiff arm having one end pivotally affixed to said sampson post and the other end pivotally affixed to said weight arm; and

means to provide energy to said gearbox to rotate said shaft to thereby cause said lever arm to rock back and forth, causing said cable to be pulled back and forth over said drum, the angular position of said weight arm being controlled by said stiff arm.

4,483,209

SPINDLE DRIVE FOR MEASURING DEVICES AND COORDINATE MEASURING CENTERS

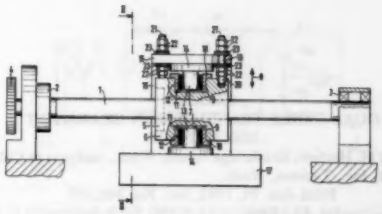
Hermann Dietrich, Ludwigshafen; Hans J. Nösges, Rottweil, and Gerhard Band, Oberndorf, all of Fed. Rep. of Germany, assignors to Mauser-Werke Oberndorf GmbH, Fed. Rep. of Germany

Filed Nov. 3, 1982, Ser. No. 438,801

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1981, 8132380[U]

Int. Cl.³ F16H *27/02*

U.S. Cl. 74—89.15 **6 Claims**



1. A spindle drive for measuring devices, comprising a threaded spindle, a nut threadably engaged on said spindle, one of said nut and said spindle being rotatable to cause one of these parts to be displaceable relative to the other of these parts along a longitudinal direction in relation to said spindle, said nut having a slide portion with at least one vertically extending blind bore, a bushing having a ball race in said blind bore, a measuring carriage having a support portion extending over said slide portion and a measuring carriage portion extending below said slide portion, at least one drive pin carried by said measuring carriage and guided in the ball race of said bushing, and a screw bolt connected between said support portion and said slide permitting vertical adjustable positioning of said slide relative to said measuring carriage.

4,483,210

MULTIPLE STAGE SPEED CHANGE GEAR DEVICE

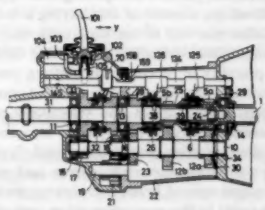
Harutaka Mayuzumi, 370-33 Kamikashio-cho, Totsuka-ku, Yokohama-shi, Kanagawa-ken, Japan

Filed Dec. 24, 1981, Ser. No. 334,133

Claims priority, application Japan, Dec. 26, 1980, 55-186278

Int. Cl.³ F16H *3/08*; G05G *5/10, 9/12*

U.S. Cl. 74—360 **16 Claims**



1. A multiple stage speed change gear device comprising:

an input shaft;

a main shaft;

a main speed change gear means providing a plurality of selectable different main gear ratios;

a sub-speed change gear means providing selectable high and low speed gear ratios, said main speed and sub-speed change gear means being selectively engagable to rotatably couple said main shaft to said input shaft;

a pivotable speed change lever;

a first operating mechanism responsive to movement of said lever in a first direction to sequentially provide said different gear ratios, each at a different main position of said lever; and

a second operating mechanism responsive to movement of said lever in orthogonally related directions from each of said main positions to sequentially provide said high and low speed gear ratios; and wherein said input shaft is disengaged from said main speed change gear means and said sub-speed change gear means with said change lever in said main positions.

4,483,211

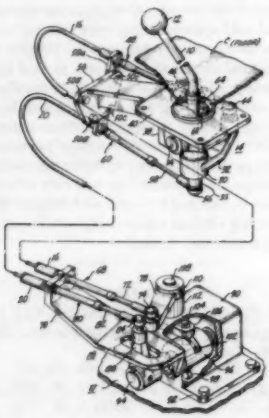
DUAL CABLE TRANSMISSION GEARSHIFT MECHANISM

Robert H. Hurlow, Bainbridge Island, Wash., assignor to Cablecraft, Inc., Tacoma, Wash.

Filed Jan. 19, 1982, Ser. No. 340,537

Int. Cl.³ F16C *1/12*; G05G *7/10, 9/16*

U.S. Cl. 74—473 R **7 Claims**



1. Remote shifter apparatus comprising two separate elongated push-pull cables, a receiver unit having a first actuation element coupled to one end of one such cable and selectively movable by longitudinal actuation of said one cable into and from any of a plurality of receiver unit shifting positions, said receiver unit having a second actuation element coupled to one end of the other of said cables and selectively movable by longitudinal actuation of said other cable into and from receiver unit shifted position selected by said first actuation element, and a transmitter unit remote from said receiver unit comprising first and second lever arms having swinging ends respectively coupled to the respective other ends of the push-pull cables, means mounting the first lever arm for swinging about an axis extending generally lengthwise of said first lever arm, means mounting the second lever arm for swinging about an axis transverse to the length of the second lever arm and which passes substantially through the coupling between the first lever arm and the end of the push-pull cable coupled thereto, and an operating lever arm common to both said first and second lever arms, extending lengthwise of said second lever arm past said second mentioned axis thence extends transversely of the lengthwise extent of said second lever arm.

4,483,212

CHANGE-SPEED TRANSMISSION WITH SELECTIVE BYPASS OF HYDROKINETIC UNIT

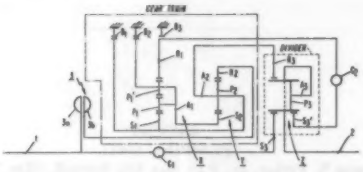
Kunio Ohtsuka, Yokohama, Japan, assignor to Nissan Motor Company Limited, Tokyo, Japan

Division of Ser. No. 274,292, Jun. 16, 1981, Pat. No. 4,369,672, which is a continuation of Ser. No. 899,991, Apr. 25, 1978, abandoned. This application Aug. 19, 1982, Ser. No. 409,762

Claims priority, application Japan, May 13, 1977, 52-54206

Int. Cl.³ F16H *47/08*

U.S. Cl. 74—688 **4 Claims**



1. A change-speed transmission comprising

an input member (1) to receive the input torque;

an output member (2) to provide the output torque;

a hydrokinetic unit (3) having a pump (3*a*) connected to said input member for simultaneous rotation therewith and a turbine (3*b*);

a first and a second clutch;

a divider in the form of a planetary gear set having at least a first, a second and a third rotary element;

a planetary gear train having first and second interconnected planetary gear sets each having at least a first, a second and a third rotary element;

said first rotary element of said divider being connected to one of said first rotary elements of said gear train for simultaneous rotation therewith;

said second rotary element of said divider being connectable through said second clutch (C_2) to one of said second rotary elements of said gear train for simultaneous rotation therewith when said second clutch is engaged;

said output member (2) being connected to said third rotary element of said divider for simultaneous rotation therewith;

said turbine being connected to one of said third rotary elements of said gear train for simultaneous rotation therewith; and

said input member being directly connectable through said first clutch (C_1) to said second rotary element of said divider for simultaneous rotation therewith so as to bypass said hydrokinetic unit when said first clutch is engaged;

the input torque of the input member thereby being split to provide at least a portion of the output torque to the output member bypassing said hydrokinetic unit for increased efficiency.

4,483,213

SELECT DETENT MECHANISM OF AN AUTOMOTIVE MANUAL TRANSMISSION

Kotei Takahashi, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Feb. 19, 1982, Ser. No. 350,387

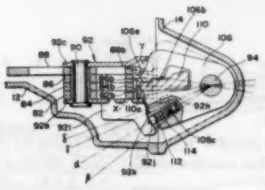
Claims priority, application Japan, Feb. 20, 1981, 56-22069

Int. Cl.³ B60K *20/00*; F16H *57/06*; G05G *5/10*

U.S. Cl. 74—475 **5 Claims**

1. In an automotive manual transmission including a plurality of shift forks slidable along a common fork shaft, a control rod rotatable about and slidable along the axis thereof which is normal to the axis of said common fork shaft, a plurality of pivoting levers pivotally supported in said transmission housing, said levers respectively jointly engaging at ends thereof with a corresponding associated shift fork to induce, upon

rotational movement of the levers, sliding movement of said shift forks on and along the common fork shaft, a pivoting pin extending normal to both the axes of said common fork shaft and said control rod for mounting thereon at least one of said pivoting levers so that the lever is rotatable about the axis of said pivoting pin, a supporting member removably connected to the transmission housing, said pivoting pin mounted on the supporting member, a selecting head member secured to said control rod and movable therewith, said head member being selectively engageable with the other end of a selected pivoting lever upon rotation of said control rod into a certain angu-



lar position, an interlock plate mounted on said control rod for rotation therewith to ensure that only the selected pivoting lever is rotatable at any given time, and a select detent mechanism comprising:

first means provided on said supporting member; and

second means provided on said interlock plate, said first and second means establishing a biasing action therebetween and being constantly and slidably engaged with each other so that upon rotational movement of said interlock plate relative to said supporting member, a detent feeling is produced via sliding engagement between said first and second means.

4,483,214

METHOD FOR THE PRODUCTION OF FIBRE REINFORCED ARTICLES

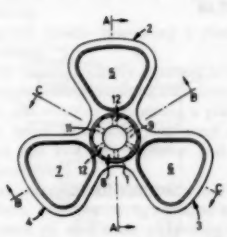
Rayner M. Mayer, Yateley, England, assignor to The British Petroleum Company p.l.c., London, England

Filed Mar. 21, 1983, Ser. No. 477,121

Claims priority, application United Kingdom, Mar. 23, 1982, 8208413

Int. Cl.³ B29C *5/00*; **B29D** *3/02*; **F16F** *15/30*; **H02K** *7/02*

U.S. Cl. 74—572 **12 Claims**



1. A method for the production by resin injection moulding of articles from fibrous material bonded in a curable matrix material which articles comprise two or more spokes extending from a hub portion, each spoke being in the form of a loop, comprising: arranging the fibrous material in a mold so that at least as many rovings of the fibrous material as there are spokes extend in continuous paths from the hub portion around each of the spokes, each of the rovings being overlaid for at least part of its length by each of the other rovings and injection molding curable material about said fibrous material and curing said curable material.

2. A spider comprising a hub portion and two or more spokes extending from the hub portion produced according to the method of claim 1.

4,483,215

TRANSMISSION WITH OVERDRIVE

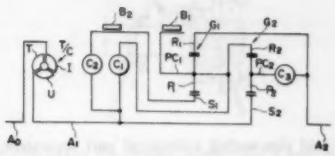
Wataru Ishimaru, Zushi, and Kunio Ohtsuka, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 24, 1980, Ser. No. 219,636

Claims priority, application Japan, Dec. 27, 1979, 54-173603

Int. Cl.³ F16H *57/10*

U.S. Cl. 74—759 **25 Claims**



1. A transmission for an automotive vehicle, comprising:

a drive shaft;

a driven shaft;

a planetary gear train between said drive and driven shafts which includes only two planetary gear sets and which comprises:

an output planetary gear set having an output element connected to said driven shaft, an input element and a reaction element,

a brake effective upon engagement to hold said reaction element,

an input planetary gear set having a first element connected to said drive shaft, a second element, and a third element,

a bridging clutch effective upon engagement to connect said third element of said input planetary gear set with said output planetary gear set,

first means for establishing a first power path connecting said input element of said output planetary gear set to said drive shaft to provide a direct drive between said drive and driven shafts upon engagement of said bridging clutch and upon disengagement of said brake,

said second element of said input planetary gear set being permanently connected to said output planetary gear set, and

second means for establishing a second power path connecting said input element of said output planetary gear set to said drive shaft to provide an overdrive between said drive and driven shafts upon disengagement of said bridging clutch and upon engagement of said brake.

4,483,216

PLANETARY-ROLLER TRANSMISSION WITH ELASTIC ROLLER OR RING

Hisayoshi Takahashi, Ama, and Shoichi Oda, Nagoya, both of Japan, assignors to Mitsubishi Jukogyo K.K., Tokyo, Japan

Filed Feb. 7, 1979, Ser. No. 10,255

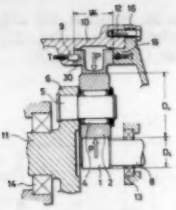
Claims priority, application Japan, Feb. 20, 1978, 53-18359; Feb. 20, 1978, 53-20615[U]

Int. Cl.³ F16H *13/06*

U.S. Cl. 74—798 **6 Claims**

1. A planetary-roller transmission for transmitting power from one rotating shaft to another by a plurality of planet rollers rotatably supported in contact with the outer periphery of a sun roller connected to a first rotating shaft and also with the inner periphery of an internal contact ring secured to a stationary member, by a carrier connected to the second rotating shaft, characterized in that at least one of said sun roller,

plurality of planet rollers, and internal contact ring being formed from an elastic material and having a plurality of thick-walled cylindrical parts spaced apart axially of the associated rotating shaft, a thin-walled cylindrical part made thinner than said thick-walled parts and serving as the surface contacting adjacent rotating parts, and thin-walled disk-shaped parts thinner than said thick-walled parts and connecting the both



sides of said thin-walled cylindrical part separately to said thick-walled parts, so that, when said thick-walled cylindrical parts are pressed toward each other at their respective outermost sides, the diameter of the thin-walled cylindrical part is changed as the thick-walled parts are brought towards one another so as to change the contact pressure to be exerted between all of said rollers and ring.

4,483,217

MEANS FOR POSITIONING A SAW BLADE IN A MACHINE FOR WORKING ON SAWS

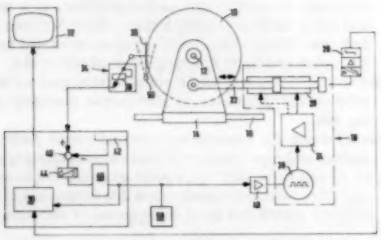
Ernst Beck, Maselheim; Peter Lenard, Biberach an der Riss, and Erich Pokorny, Schemmerhofen, all of Fed. Rep. of Germany, assignors to Vollmer Werke Maschinenfabrik GmbH, Biberach an der Riss, Fed. Rep. of Germany

Filed Aug. 5, 1983, Ser. No. 520,729

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1982, 3230189

Int. Cl.³ B23D *63/12*

U.S. Cl. 76—75 **15 Claims**



1. A means for positioning a saw blade in a machine for working on saws, comprising

a saw blade carriage **(14)** for supporting the saw blade **(10)**,

and an adjusting drive means **(18)** for adjustment of the saw blade carriage **(14)** along a carriage guide means **(16)**, characterized in that

a distance measuring means **(26,28,30)** is associated with the saw blade carriage **(14)**,

a sensor means **(34)** is disposed in the path of movement of the saw blade **(10)** supported on the saw blade carriage **(14)** to emit signals in response to the position of a front edge portion of the saw blade **(10)** extending transversely of the carriage guide means **(16)**,

and the adjusting drive means **(18)** is controlled by those signals and stopped at a predetermined rated position of the front edge portion of the saw blade **(10)**.

4,483,218

CLAMPING DEVICE FOR A SAW BLADE IN A MACHINE FOR WORKING ON SAWS

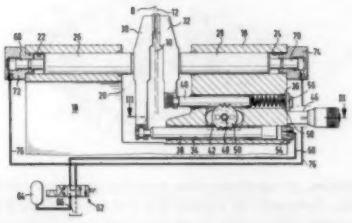
Ernst Beck, Maselheim, and Peter Lenard, Biberach an der Riss, both of Fed. Rep. of Germany, assignors to Vollmer Werke Maschinenfabrik GmbH, Biberach an der Riss, Fed. Rep. of Germany

Filed Aug. 5, 1983, Ser. No. 520,735

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1982, 3230278

Int. Cl.³ B23D *63/14*

U.S. Cl. 76—78 R **12 Claims**



1. A clamping device for a saw blade in a machine for working on saws, comprising a pair of opposed clamping jaws **(30, 32)** adapted to be operated by fluid pressure and in addition to be supported mechanically so as to hold the saw blade **(10)** clamped between them in a certain position,

characterized in that the two clamping jaws **(30, 32)** are connected by a gearing **(38, 40, 50)** which has a fixed point (axis **48**) and guides the clamping jaws **(30, 32)** symmetrically with respect to a central plane (B).

4,483,219

SCREW DRIVING APPARATUS

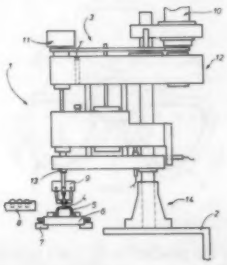
Walter Sticht, and Gerhard Schwankhart, both of Attnang, Austria, assignors to Stiwa-Fertigungstechnik Sticht Gesellschaft M.B.H., Attnang, Austria

Filed Feb. 22, 1983, Ser. No. 468,167

Claims priority, application Austria, Mar. 5, 1982, 865/82

Int. Cl.³ B25B *23/00*

U.S. Cl. 81—57.14 **16 Claims**



1. An apparatus for driving a screw into a workpiece, which comprises

(a) a support stand,

(b) a rotating drive mounted on the support stand,

(c) a replaceable flywheel mass,

(d) a coupling between the rotating drive and the flywheel mass for transmitting a rotary motion from the drive to the flywheel mass,

(e) a holder for a screwdriver keyed to the flywheel mass for

rotation therewith whereby the screw may be driven into the workpiece in a screw driving direction,

(f) an adjustment drive for adjustably positioning the holder in relation to the rotating drive in said direction,

(g) a device for blocking a recoil of the holder in a direction opposite to the screw driving direction, the recoil blocking device being arranged between the support stand and the holder, and

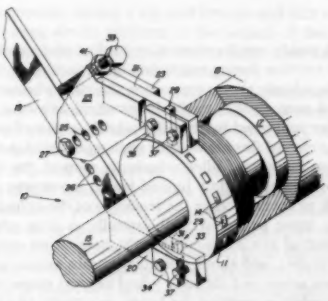
(h) a control for selectively operating the recoil blocking device at least during the recoil of the holder.

4,483,220

ADJUSTABLE SPANNER WRENCH

Aloysius C. Shindelar, Hudson, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Jun. 16, 1980, Ser. No. 159,615
Int. Cl.³ B25B *13/28*
U.S. Cl. 81—100 **3 Claims**



1. An adjustable spanner wrench for rotating a hydraulic cylinder rod guide cap which has a plurality of circumferentially spaced apart and oppositely aligned openings, said wrench comprising:

(a) an elongated handle containing a plurality of spaced apart openings;

(b) a first arm member rigidly attached to one end of said handle and projecting outward therefrom;

(c) a second arm member containing a plurality of spaced apart bolt holes adjustably positioned on said handle, distal from said first arm member, and projecting outwardly therefrom;

(d) a first and a second tool secured to said first and second arm members, respectively, in an inline and parallel relationship, each of said tools containing a hardened tip capable of positively engaging one of said openings in said rod guide cap;

(e) fastening means for attaching said second arm member to said handle, said fastening means including a bolt and nut, said bolt passing through one of said spaced apart openings in said handle and through one of said bolt holes in said second arm member such that said first and second tools are equal distance from said fastening means; and

(f) adjusting means positioned between said second arm member and said handle for forcing said second arm member toward said first arm member so that said first and second tools positively engage two of said oppositely aligned openings in said rod guide cap and exert an equal force thereon.

4,483,221

PLIERS-TYPE TOP OPENER

Nathan D. Hoskins, 6 Maywood Dr., Jackson, Tenn. 38301

Filed Apr. 8, 1983, Ser. No. 485,464
Int. Cl.³ B67B *7/18*
U.S. Cl. 81—3.44 **2 Claims**

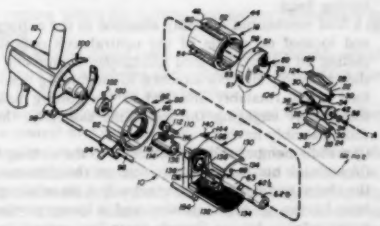
1. A pliers-type top opener, comprising a pair of pivotally interconnected handles each having a gripper at one end, each handle being bent from sheet steel, each handle having a flat intermediate portion, means pivotally interconnecting the flat intermediate portions of the handles for relative swinging movement about an axis passing through and perpendicular to the flat intermediate portions, the sheet steel of the handles being bent substantially 90° about a helical bend out of the plane of the intermediate portion to form an end portion carrying the gripper, each gripper having a web that extends from an edge of said end portion away from the other gripper and terminates in a flange which extends from the edge of each web remote from the other web, only in a direction away from said plane of said flat portion, each web being spaced a substantial distance to one side of said plane whereby all portions of said flanges are spaced a substantial distance from said plane, said flanges being concave and opening toward each other to grasp a top between them when said handles are brought together.

4,483,222

PIPE REAMING DEVICE

Dalton W. Davis, 214 W. Spinner, DeSoto, Tex. 75115

Filed Aug. 28, 1981, Ser. No. 297,495
Int. Cl.³ B23B *51/00, 41/00*
U.S. Cl. 82—1.2 **8 Claims**



1. A device for removing pipe attached to a fitting, comprising: a tubular member; a tubular shaft operatively connected to said tubular member and disposed concentrically around an axis of rotation and having means for driven rotation; a cutting blade carried by said tubular member around the axis of rotation, said cutting blade having a cutting edge and a tapered edge; a drive shaft; an annulus gear supported concentrically around the axis of rotation; a sun gear disposed concentrically around the axis of rotation and connected to the drive shaft; a planetary gear operably disposed between the annulus and sun gears and rotatably connected at its axis for rotation with said tubular shaft; an urging member threadedly connected to the

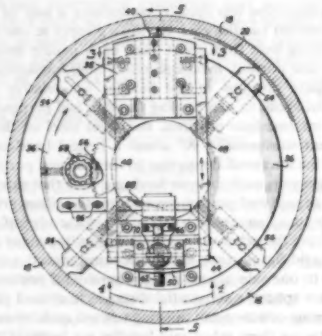
drive shaft for movement in first and second directions, the urging member having a surface coacting with the tapered edge of said blade to move the cutting edge into engagement with the pipe while said tubular member is being rotated; braking means for stopping rotation of said annulus gear to thereby turn the planetary gear and the sun gear and the drive shaft which moves the urging member in a direction such that the cutting edge of the blade engages the pipe; and wrench means for gripping the pipe fitting for supporting the fitting with the axis of the pipe to be removed disposed coaxially with the axis of rotation of said tubular member.

4,483,223

PORTABLE LATHE

Lawson H. Nall, Folsom, and Richard E. Miller, Citrus Heights, both of Calif., assignors to Tri Tool Inc., Rancho Cordova, Calif.

Filed Apr. 7, 1983, Ser. No. 482,721
Int. Cl.³ B23B 5/16
U.S. Cl. 82—4 C **15 Claims**



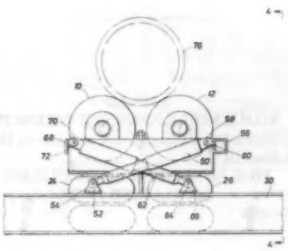
1. A portable lathe comprising:
(a) a stationary body having a central axis;
(b) means to attach the stationary body to a workpiece;
(c) a cutting head rotatably attached to the stationary body so as to rotate about the central axis;
(d) means to rotate the cutting head about the central axis;
(e) a cutting bit holder;
(f) means slidably attaching the cutting bit holder to the cutting head;
(g) a feed mechanism movably attached to the cutting head and located on a side of the central axis opposite the cutting bit holder, the feed mechanism comprising a feed slide assembly slidably attached to the cutting head and a feed screw rotatably attached to the cutting head and threadingly engaging the feed slide assembly, the feed slide assembly having:
(i) a slide member slidably attached to the cutting head;
(ii) a clutch nut rotatably mounted on the slide member, the clutch nut defining a bore extending therethrough, the bore having an upper portion and a lower portion, the upper portion having threads extending around approximately half the circumference on one side of the bore and the lower portion having threads extending around approximately half the circumference on an opposite side of the bore such that when the clutch nut is in a first position, the threaded halves of the upper and lower portions engage threads on the feed screw thereby causing the slide member to move as the feed screw rotates, and when the clutch nut is in a second position, the threaded halves are out of engagement with the feed screw thereby enabling the slide member to be moved independently of the feed screw rotation; and
(h) connecting means comprising at least one connecting bar having one end connected to the slide member and the other end connected to the cutting bit holder such that, as the feed mechanism moves toward the central axis, the cutting bit holder is moved away from the central axis and vice versa.

4,483,224

STABILIZERS FOR A STEADY REST

Roy Lee, Jr., 10134 Briar Dr., Houston, Tex. 77042

Filed Jun. 8, 1983, Ser. No. 502,152
Int. Cl.³ B23B 25/00
U.S. Cl. 82—39 **3 Claims**



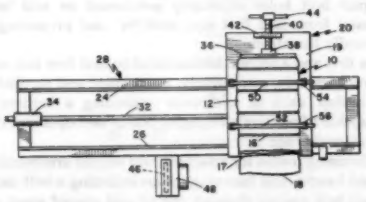
1. A steady rest for supporting a cylindrical member for high speed rotation during machining operations comprising a pair of idler wheels, means supporting the idler wheels for rotation around axes parallel to the longitudinal axis of a cylindrical member supported by the idler wheels, a pair of air cylinders having curved flexible walls or resilient material in side-by-side position below the idler wheels to support the idler wheel support means to allow limited lateral movement of the idler wheels to accommodate the tendency of the cylindrical member to move back and forth laterally as it is rotated on its longitudinal axis if it is not straight, base means supporting the air cylinders, and shock absorbing means connected between the base means and the idler wheel support means to assist the air cylinders in resisting the lateral movement of a nonstraight cylindrical member rotating rapidly on the idler wheels.

4,483,225

METHOD FOR REMOVING DAMAGED ENDS FROM BALES

Ralph L. Dankworth, 4546 W. Crivello, Laveen, Ariz. 85339

Filed Dec. 16, 1982, Ser. No. 450,360
Int. Cl.³ B26D 7/06
U.S. Cl. 83—13 **6 Claims**



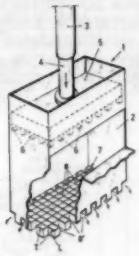
1. The method of removing the damaged end from a covered bale of fibrous material comprising the steps of:
opening the bale cover;
positioning the bale in the proper location for cutting to remove just the damaged end;
automatically moving the bale to a cutting location;
automatically removing the damaged end from the bale; and
closing the bale cover.

4,483,226

MACHINE FOR SHEARING FILMS OF THERMOPLASTIC MATERIAL

Edoardo Costarelli, Via F. 11i Pellas, 34, Perugia, Italy (06100)

Filed Sep. 22, 1982, Ser. No. 421,159
Claims priority, application Italy, Aug. 18, 1982, 49002 A/82
Int. Cl.³ B26D 7/06
U.S. Cl. 83—425.3 11 Claims



1. Machine for shearing films of thermoplastic material comprising:

a hollow container having a top and bottom and side walls;

a mesh shearing device mounted at the bottom of the container formed by a lattice of blades with their cutting edges directed inwardly of the container;

a compression plate mounted within said container for movement between the top and lattice at the bottom; and having its peripheral surface in close proximity to the interior surface of said side walls;

a plurality of punch members on the peripheral area only of the side of said compression plate facing said lattice, said punch members protruding from said plate toward said lattice and being spaced with respect to each other so that they are interengageable with peripheral mesh openings in said lattice so that in operation said punches and compression plate between said lattice and compression plate push material through said lattice to shear the material;

a hydraulic device operatively connected to said compression plate to move it reciprocally in said container; and

electric motor means to provide hydraulic fluid pressure to operate said hydraulic device.

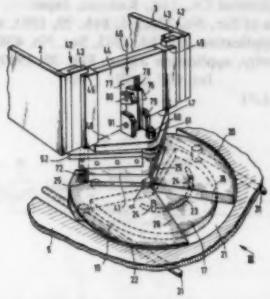
4,483,227

CORNER SHEARS

Alessandro Camisa, Felegara, Italy, assignor to F.I.M. s.r.l., Italy

Filed Jun. 28, 1982, Ser. No. 393,042
Claims priority, application Fed. Rep. of Germany, Jan. 13, 1982, 8200527[U]
Int. Cl.³ B23D 15/08
U.S. Cl. 83—559 20 Claims

1. Corner shears for cutting out obtuse-angled to acute-angled corners from sheet metal by means of upper and lower knives which interact in the manner of scissors and which, to form an angular cutting edge, consist respectively of two knives placed against one another in a V-shaped manner and supported on knife carriers pivotable about a vertical axis, the pivot axis passing through the respective cutting corner, said upper-knife carriers being circular-sector segments arranged pivotally about a pivot pin coinciding with the vertical axis, and means being provided for adjusting the angle between the cutting edges, wherein each upper-knife carrier is connected positively, without the shear stroke being impeded, to the



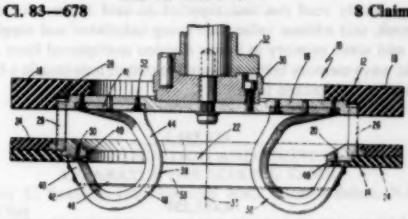
corresponding lower-knife carrier via an engagement piece fastened to the upper-knife or lower-knife carrier.

4,483,228

ROTARY CUTTER WHEEL FOR CONTINUOUS FILAMENTARY TOW

Roland Waite, Matthews, and Walter J. Stikeleather, Charlotte, both of N.C., assignors to Celanese Corporation, New York, N.Y.

Filed Jan. 27, 1982, Ser. No. 343,241
Int. Cl.³ D01G 1/04
U.S. Cl. 83—678 8 Claims



1. A cutting wheel for cutting continuous filamentary tow comprising:

first and second plates, said plates being rotatable about a common axis and being mutually spaced in the axial direction to define a space therebetween,

said second plate including a ring-shaped section defining a central tow exit opening,

an annular row of cutter blades extending between said first plate and said ring-shaped section of said second plate,

said blades having radially outwardly facing cutting edges such that as filamentary tow is wrapped around said row of blades and pushed thereagainst, the tow is cut by said cutting edges and passes between said blades,

a plurality of connector arms securing together said first and second plates, each connector arm defining a clearance inwardly of said blades to accommodate free inward travel of tow cut by said blades, each connector arm including:

a first segment extending from said ring-shaped section of the second plate away from the plane of said second plate in a direction opposite said first plate, and

a second segment extending in a direction toward said first plate and disposed radially inwardly of said ring-shaped section.

4,483,229

ELECTRONIC MUSICAL INSTRUMENT

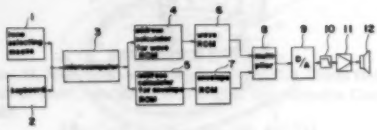
Masao Tsukamoto, Katano; Kinji Kawamoto, Yawata, and Masaru Uya, Kadoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 236,306, Feb. 20, 1981, abandoned. This application Jan. 14, 1983, Ser. No. 458,051

Claims priority, application Japan, Feb. 20, 1980, 55-20734

Int. Cl.³ G10H *1/00*

U.S. Cl. 84—1.01 **2 Claims**



1. An electronic musical instrument having a wave generating means for use in a tone generator having an Inverse Fourier Transformation means, said wave generating means comprising a wave memory for storing a plurality of wave data and an address calculator operatively connected to said wave memory for calculating and supplying an address value to said wave memory, wherein a plurality of wave data is supplied as a time division multiplexed output from said wave memory; wherein said address calculator comprises an arithmetic logic circuit and a random access read/write memory having a plurality of addresses, and wherein said random access read/write memory stores a plurality of groups of data, each of which including values corresponding to an octave and number of harmonics of a tone wave and necessary for calculation of said address values of said wave memory, and wherein one group of data is sequentially read out and supplied to said arithmetic logic circuit, said address value then being calculated and supplied to said wave memory in a time division multiplexed form and said wave memory being arranged to output tone data in a time division multiplexed form.

4,483,230

ILLUMINATION LEVEL/MUSICAL TONE CONVERTER

Masamichi Yamauchi, Tanashi, Japan, assignor to Citizen Watch Company Limited, Tokyo, Japan

Filed Jul. 18, 1983, Ser. No. 514,986

Claims priority, application Japan, Jul. 20, 1982, 57-126143; Aug. 24, 1982, 57-145424; Oct. 13, 1982, 57-179266

Int. Cl.³ G10F *1/00*

U.S. Cl. 84—1.03 **8 Claims**

1. An illumination level/musical tone converter, comprising:

a timebase oscillator circuit for producing a timebase signal;

a light sensor for producing activation power in response to a level of illumination incident thereon;

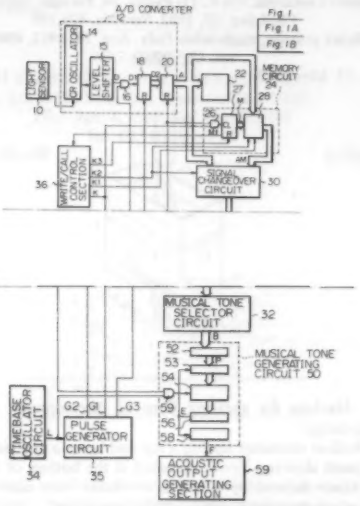
an analog/digital converter circuit which operates at least partially from said activation power as a source of power, and generates illumination level digital signals in accordance with the level of said activation power;

a pulse generating circuit coupled to receive said timebase signal and producing control signals to control the operation of said analog/digital converter circuit;

a musical tone selection circuit for producing musical tone selection signals in accordance with said illumintion level digital signals from said analog/digital converter circuit;

a musical tone generating circuit for producing approximate musical tone frequency signals in accordance with said musical tone selection signals from said musical tone selection circuit; and

an acoustic output device coupled to receive said approximate musical tone frequency signals from said musical



tone generating circuit, and responsive thereto for producing corresponding audible musical tones.

4,483,231

PRESET APPARATUS OF ELECTRONIC MUSICAL INSTRUMENT

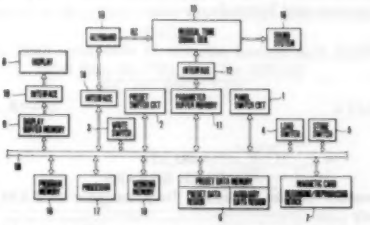
Katsuhiko Hirano, Shizuoka, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Sep. 30, 1982, Ser. No. 431,890

Claims priority, application Japan, Oct. 5, 1981, 56-148468[U]

Int. Cl.³ G10H *1/02*

U.S. Cl. 84—1.19 **8 Claims**



1. A preset apparatus of an electronic musical instrument comprising:

parameter setting means including a plurality of parameter setting members for setting parameters which determine a characteristic of a musical tone to be produced;

first memory means for storing said parameters as a preset data set;

auxiliary data input means for inputting auxiliary data representing information other than said parameters and to be used in combination with said preset data set;

second memory means for storing said auxiliary data;

preset switch means for selectively designating storage portions of said first and second memory means;

control means for controlling writing and reading of said preset data set and said auxiliary data into and out of said storage positions of said first and second memory means designated by said preset switch means; and

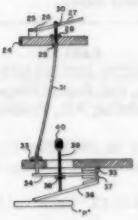
display means for displaying said auxiliary data read out of said second memory means.

4,483,232

COMBINATION FOOT STOOL AND PIANO FLOOR PEDAL ACTUATOR

Fred Pavick, 2465 W. Balmoral, Chicago, Ill. 60625

Filed Sep. 23, 1983, Ser. No. 535,028
Int. Cl.³ G10C *3/26*
U.S. Cl. 84—232 **1 Claim**



1. A combination foot stool and piano pedal actuator comprising:

(a) a stationary horizontally extending elevated base adapted to be positioned over a piano foot pedal,

(b) a pair of side walls connected to and extending above and below certain opposite side edges of said base,

(c) a movable platform between said side walls above and in parallel relation to said base,

(d) means for movably supporting said platform between said side walls for movement through a vertical plane relative to said base,

(e) means for releasably locking said platform to said supporting means at any point throughout its vertical length so as to vary the distance between said base and said platform,

(f) an auxiliary foot pedal hingedly carried by the top surface of said platform,

(g) an actuating plate pivotally carried on the under side of said base,

(h) a flexible means connecting said auxiliary foot pedal to said actuation plate for effecting simultaneous movement relative to said platform and said base respectively,

(i) a piano pedal contacting plate hinged to said actuating plate and adapted for independent and simultaneous pivotal movement with repect thereto, and

(j) an adjusting means extending between said actuating plate and said piano pedal contacting plate for varying the distances therebetween and for effecting pivotal movement of said piano pedal contacting plate in one direction upon simultaneous pivotal movement of said auxiliary foot pedal and said actuating plate for depressing a piano foot pedal.

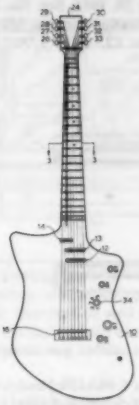
4,483,233

COMBINED GUITAR AND BASS GUITAR HAVING EIGHT STRINGS

Ron Benson, 6757 Hollywood Blvd., Hollywood, Calif. 90028

Filed Sep. 30, 1982, Ser. No. 431,395
Int. Cl.³ G10D *1/08*
U.S. Cl. 84—263 **6 Claims**

1. A guitar of the type employing a body, a neck, and a plurality of strings, the improvement comprising: said plurality of strings comprising eight strings tuned in ascending order from a bass note to a treble note, the four adjacent strings which include said bass note being tuned proportional to the standard ascending bass scale of E, A, D, and G, and the six adjacent strings which include said treble note being tuned proportional to the standard ascending guitar scale of E, A, D,



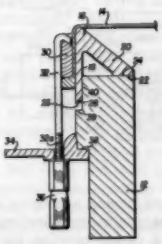
G, B, and E, the top two strings of said four strings being the bottom strings of said six strings, whereby a guitarist can play said four strings in the manner of a bass guitar and said six strings in the manner of a conventional six stringed guitar.

4,483,234

BANJO CONSTRUCTION AND METHOD AND APPARATUS FOR MAKING SAME

Harry C. Snavely, 115 Plymouth Ave., Winston-Salem, N.C. 27104

Filed Nov. 9, 1982, Ser. No. 440,306
Int. Cl.³ G10D *1/10*
U.S. Cl. 84—269 **7 Claims**



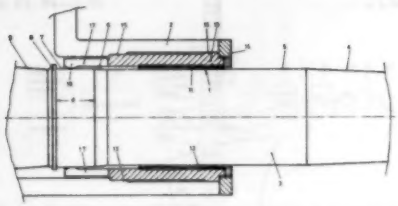
1. A banjo sub-assembly construction comprising a generally cylindrical rim having an inside diameter and an outside diameter, a generally annular tone ring, having a flange portion adapted to be fitted to the outside diameter of said rim at an interface therebetween, said flange portion having an inside diameter, the outside diameter of said rim being greater than the inside diameter of said flange portion, whereby a substantial interference fit is provided at said interface.

4,483,235

BEARING MEANS FOR A GUN BARREL

Sten Hallqvist, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed May 20, 1982, Ser. No. 380,330
Claims priority, application Sweden, May 26, 1981, 8103297
Int. Cl.³ F41F 17/00
U.S. Cl. 89—14 R 4 Claims



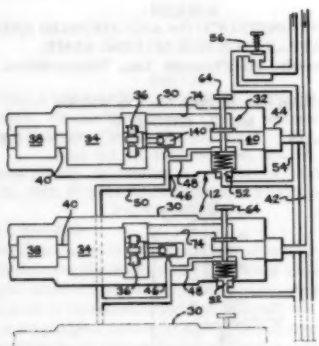
1. An improved large caliber gun comprising:
a breech casing;
a gun barrel having a forward cylindrical part and a larger diameter, rearward cylindrical part;
a cylindrical bearing mounted in said breech casing for slidably engaging said forward cylindrical part during recoil of said gun after firing a projectile; and
spring means attached to said bearing for slidably engaging said rearward cylindrical part during recoil only while the projectile remains in the bore of the barrel and for thereafter disengaging from contact with said barrel.

4,483,236

PNEUMATIC THROTTLE CONTROL

George R. Curtiss, Chardon, Ohio, assignor to The Rotor Tool Company, Cleveland, Ohio

Filed Jan. 26, 1981, Ser. No. 228,335
Int. Cl.³ F01B 25/26
U.S. Cl. 91—1 15 Claims



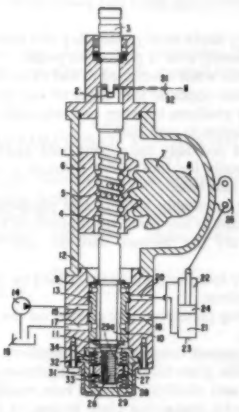
1. In a pneumatic tool having a housing and a pneumatic motor, the improvement comprising a first valve means having an open position and a closed position for supplying compressed air to said pneumatic motor in said open position, biasing means urging said first valve means to the closed position, piston means secured to a common member with said first valve means for common movement therewith, said piston means selectively maintaining said first valve means in an open position, second valve means having closed and open positions for supplying compressed air to said piston means when in open position and means for sensing the speed of rotation of said pneumatic motor to open said second valve means when such speed exceeds a minimum value thereby to supply compressed air to said piston means to maintain the piston means and first valve means connected thereto in a piston position corresponding to the open position of the first valve means with the compressed air on the piston means when the second valve means is open providing sufficient force to overcome the biasing means acting in an opposite direction, and restriction means for adjusting the flow of compressed air to said pneumatic motor, said restriction means including a cylindrical chamber defined by said housing having at least one first aperture in the sidewall of said chamber and a cylindrical member disposed within said chamber, said member defining at least one second aperture and having indicator means associated therewith and visible external to said housing for indicating the angular position of said second aperture whereby said first and second apertures may be selectively aligned to adjust the flow of compressed air to said motor.

4,483,237

STEERING GEAR WITH AUXILIARY POWER SUPPORT

Dieter Elser, Essingen, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany

Filed May 10, 1983, Ser. No. 493,289
Claims priority, application Fed. Rep. of Germany, May 19, 1982, 3218844
Int. Cl.³ F15B 9/12
U.S. Cl. 91—368 18 Claims



1. A hydraulic servo cylinder booster steering valve mechanism of the kind comprising a housing means and having a rotative steering spindle coupled to an axially movable and rotative worm shaft (4) having a thread carrying a ball nut (5) meshing with a gear sector which connects with a double acting servo-motor for actuation of a steering linkage, and having a valve spool (13) carried on the worm shaft axially movable, including a valve spool centering means for neutral position thereof wherein said centering means comprises a collar (27) on said worm shaft and spring means (33, 34) acting on opposite sides of said collar and against limit stops (31, 32) on opposite sides of said collar;
the improvement comprising a thread for a threaded connection (26) between said collar and said worm shaft;
said threads being of opposite hand;
means (28, 28a) preventing rotation of said collar whereby said collar is shifted axially by said threaded connection in one direction or the other depending on rotative steering direction of said worm shaft;
wherein one spring means or the other is spaced under stress from the respective limit stop by axial shift of said collar

from a neutral position during a steering operation effected by manual force on said spindle;

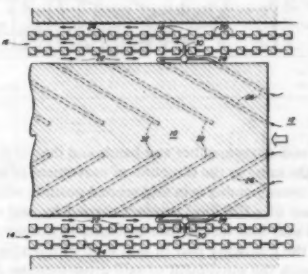
release of manual force permitting the stressed spring means to reverse the axial shift of said collar whereby to shift said worm shaft and valve spool in an axial direction past neutral position to reversely pressurize said servo cylinder for returning the steered wheels of a vehicle back to straight ahead position.

4,483,238

DUST CONTROL IN LONGWALL MINING

Pramod C. Thakur, Morgantown, W. Va., assignor to Conoco Inc., Ponca City, Okla.

Filed Oct. 1, 1982, Ser. No. 432,202
Int. Cl.³ E21F *1/00*
U.S. Cl. 98—50 **5 Claims**



1. A method of controlling dust at the working face area of a longwall coal mining operation comprising:

(a) drilling a plurality of boreholes through a longwall pillar, said boreholes extending from a gate road to the face of said pillar and intersecting said face at an angle of from 30 to 60 degrees;

(b) attaching air withdrawal means to said plurality of boreholes and drawing dust-laden air through said boreholes from the face area and exhausting said dust-leaden air from said boreholes;

(c) drilling additional boreholes from a gate road into said pillar at an angle to the face of said pillar, said additional boreholes being more remote from said face than said plurality of boreholes such that said additional boreholes intersect said face as it moves through said pillar; and

(d) as said face advances through said pillar, disconnecting said air withdrawal means from said plurality of boreholes, and connecting said air withdrawal means to said additional boreholes.

4,483,239

COOKING GRILL ADAPTER

Martin J. Mueller, 4520 Wonder Lake Dr., Wonder Lake, Ill. 60097, and Martin Mueller, 4949 E. Lake Shore Dr., Wonder Lake, Ill. 60097

Filed Dec. 20, 1982, Ser. No. 451,400
Int. Cl.³ A47J *37/06*
U.S. Cl. 99—340 **14 Claims**

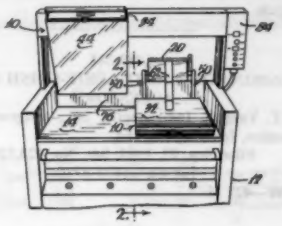
1. An adapter for converting a grill having a horizontally oriented cooking surface for two-sided cooking comprising:

a vertically oriented support standard;

a cooking platen;

mounting means connecting said platen to said standard for pivotal movement between a non-operational upraised position and an operational position above and in substantial parallelism with said cooking surface, said mounting means comprising a horizontally oriented shaft in said standard and a support arm projecting upwardly from said platen, said support arm being pivotally carried on said shaft; and

adjusting means for selectively varying the distance between



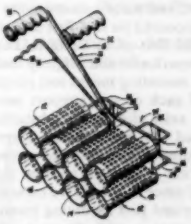
said platen and cooking surface when the platen is in the operational position, said adjusting means comprising an eccentric fixedly mounted on said shaft, said support arm being pivotally carried by said eccentric.

4,483,240

COOKING UTENSIL FOR DEEP FAT FRYING OF FOOD ITEMS

Tri-Trong Dinh, R.R. #2 Lot #24, N. Haven Trailer Ct., Muscatine, Iowa 52761

Filed Mar. 17, 1983, Ser. No. 476,067
Int. Cl.³ A47J *37/12*
U.S. Cl. 99—407 **10 Claims**



1. A cooking utensil for the deep fat frying of food objects such as spring rolls comprising:

a food holding container having a first open end for insertion of said food object and having a second opposite open end;

a piston member having a flat piston head and a piston rod attached to said piston head extending outwardly from said second open end, said piston member being slidably movable in the interior of said container;

control means for selectively moving said piston member inwardly along the interior of said container from a first position near said second open end to a second position toward said first open end, said control means having a control framework connected to said piston rod of said piston member, a biasing means between said container and said control framework which holds said piston member at said first position, and an adjustment means which counteracts said biasing means and forces said piston member from said first position to said second position, so that when said adjustment means is not engaged, said piston member returns to said first position;

said biasing means having a plate attached to said container, a shaft attached at one end to said control framework, a tubular journal positioned parallely with said container and transversely in said plate through which said shaft slidably passes, a spring member positioned and retained

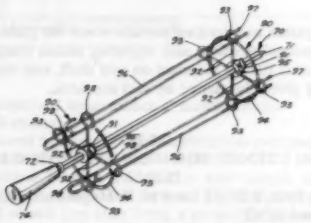
between said plate and said control framework, said spring member being in an extended position when said piston member is at said first position and being in a compressed position when said piston member is at said second position so as to urge said piston member to said first position.

4,483,241

COMBINATION ROTISSERIE-SHISH KEBAB ACCESSORY

William T. Vaughn, Indianapolis, Ind., assignor to Jenn-Air Corporation, Indianapolis, Ind.

Filed Sep. 27, 1982, Ser. No. 423,529
Int. Cl.³ A47J *37/04*
U.S. Cl. 99—421 H **2 Claims**



1. A free-standing combination rotisserie and shish kebab accessory comprising: a pair of support means each having first and second spaced axles; first substantially imperforate and brightly finished end piece means having first mounting means and pivotally mounted on said first axle of each of said support means with said first axles being in axial alignment; second substantially imperforate and brightly finished end piece means having second mounting means and pivotally mounted on said second axle of each of said support means with said second axles being in axial alignment; substantially imperforate and brightly finished side piece means adapted to be selectively, removably secured to said first and second end piece means to selectively permit or prevent pivotal movement of said first and second end piece means; drive means adapted to be removably secured to said first mounting means; spit means adapted to selectively engage said drive means and to be rotated thereby; bearing means on said spit means and adapted to be supportingly received in said second mounting means; and food holding means for securing food to said spit means including a pair of locking ring means each comprising a hub, a plurality of radially extending arms secured to said hub and terminating in a generally circular eye, a circular support secured to said arms radially inward of the center of said eyes, means for securing said locking ring means to said spit means, and a plurality of elongated U-shaped skewers each having a diverging section for snapping over one of said eyes into contact with said circular support.

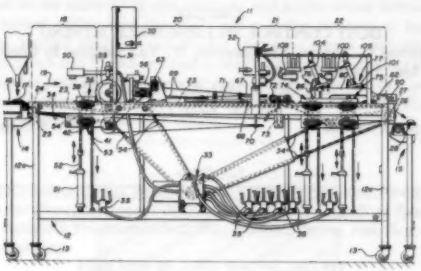
4,483,242

AUTOMATED FOOD PROCESSING EQUIPMENT

William D. Goodman, Dallas, and Dan Sutherland, Red Oak, both of Tex., assignors to Campbell-Taggart, Inc., Dallas, Tex.

Filed Mar. 19, 1982, Ser. No. 359,874
Int. Cl.³ A21C *9/06*
U.S. Cl. 99—450.6 **29 Claims**

1. A food processing machine for folding rolled sandwich-type food products having a plurality of laterally spaced conveyor bands to carry a relatively thin flat wrapper of a food product along a generally horizontal path and a folding mechanism disposed over said conveyor bands; said folding mechanism comprising bracket members rotatably mounted on either side of said plurality of conveyor bands; a cross-member; means securing said cross-member between said bracket members for arcuate rotation of said cross-member above said conveyor bands about an axis lying generally perpendicular to the direction of movement of said conveyor bands from a first position to a second position; and a plurality of tine members extending from the cross-member between said conveyor bands and then beneath said bands in a direction generally opposite to that of the movement of said bands when said cross-member is in said first position, said tine members extending above said cross-member and bands and then in a direction generally the same as the direction of movement of said bands when said cross-member is in said second position whereby the forward part of a flat food product carried by said conveyor bands past said fold mechanism is folded in a transverse fold back over the following part of said food product by said tine members with the movement of said cross-member from said first position to said second position.

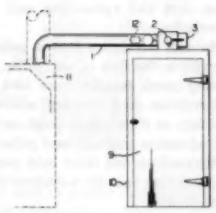


4,483,243

APPARATUS FOR RISING DOUGH

Allan A. Cote, R.R. #2, Calgary, Alberta, Canada

Filed Jun. 12, 1981, Ser. No. 273,088
Int. Cl.³ H05B *1/00*; A21C *13/00*
U.S. Cl. 99—468 **11 Claims**



1. A proofing apparatus for rising dough, comprising:
an enclosure for containing dough;
manifold means provided outside said enclosure and including therein means for circulating hot air within said enclosure, said manifold means having
(a) an outlet communicating with a hot air supply inlet opening into the interior of said enclosure and an inlet communicating with a hot air outlet opening from the interior of said enclosure;
(b) blower means having an outlet communicating with said manifold outlet for directing hot air into said enclosure via said hot air supply inlet and an inlet communicating with the interior of said manifold means for drawing air from said enclosure via said hot air outlet thereof;
(c) a hot air supply duct opening into the interior of said manifold for connecting said manifold means to an external source of hot air, said hot air from said external source

being drawn into said manifold means by said blower means;

(d) control means responsive to means for sensing the temperature in the interior of said enclosure for regulating the inflow of the hot air through said supply duct into said manifold means in accordance with the temperature sensed by said means for sensing temperature; and

(e) means for humidifying the hot air passing through said manifold means into said enclosure.

4,483,244

RICE WHITENING APPARATUS

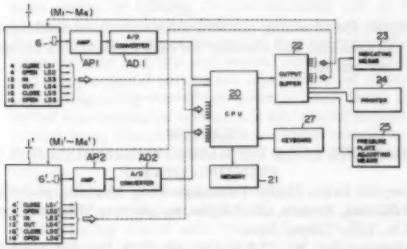
Yukio Hosaka, Higashihiroshima, Japan, assignor to Satake Engineering Co., Ltd., Tokyo, Japan

Filed Dec. 6, 1983, Ser. No. 558,628

Claims priority, application Japan, Dec. 13, 1982, 57-216872; Dec. 13, 1982, 57-216873

Int. Cl.³ B02B *3/00*; B02C *25/00*

U.S. Cl. 99—488 **8 Claims**



1. A rice whitening apparatus comprising,

a rice whitening unit;

a first sensor means provided at a brown rice side of said rice whitening unit, including a first reflected light receiving sensor for measuring a degree of reflected light from the brown rice;

a second sensor means provided at a milled rice side of said rice whitening unit, including a second reflected light receiving sensor for measuring a degree of reflected light from the milled rice;

a calculating means coupled with said first sensor means and second sensor means for calculating a degree of milling of the rice based on the degree of reflected light from said first and second sensor means; and

an indicating means coupled with said calculating means for indicating the degree of milling calculated by said calculating means.

4,483,245

BALING APPARATUS

Wayne A. Fetters, P.O. Box 841, Canby, Oreg. 97013

Filed Nov. 8, 1982, Ser. No. 439,856

Int. Cl.³ B65B *13/20*

U.S. Cl. 100—7 **15 Claims**

1. Apparatus for compressing elongated articles into bales comprising

(a) a base frame having forward and rearward ends and opposite sides,

(b) an upper extension on said base frame,

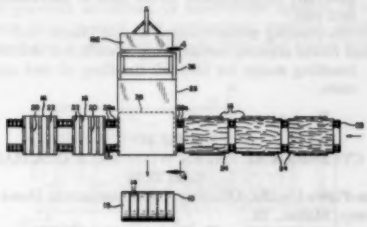
(c) at least two pairs of opposed arms supported on said upper extension in pivotal depending spaced relation with said pairs of arms being substantially parallel,

(d) said arms in each pair being aligned from front to rear whereby to provide side openings into the area therebetween,

(e) means connected to said arms arranged to move opposed arms between open article receiving position and closed article baling position,

(f) an article holding cartridge having pairs of upstanding spaced ribs arranged to confine articles therebetween for baling,

(g) said opposed pairs of ribs being substantially parallel with



each other and spaced so that said arms can move therebetween whereby articles on said cartridge can be compressed into a bale by movement of said arms to said baling position through the area between said ribs,

(h) and a transversely extending conveyor associated with said frame for moving said cartridges from the side into a baling position for articles in the area between said arms.

4,483,246

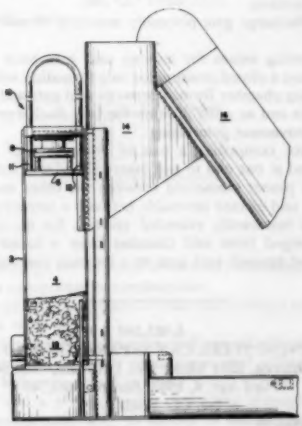
APPARATUS FOR CRUSHING METAL CONTAINERS AND ASSOCIATED METHOD

Patrick J. Sullivan; Richard J. White, and Lloyd M. Bigley, all of Pittsburgh, Pa., assignors to Weinman Pump & Supply Company, Pittsburgh, Pa.

Filed Mar. 22, 1982, Ser. No. 360,792

Int. Cl.³ B30B *9/32*

U.S. Cl. 100—35 **15 Claims**



1. Apparatus for crushing containers comprising

a housing having a compaction chamber,

a first ram having a platen secured thereto for crushing said containers into a compacted unit,

power means for effecting reciprocating movement of said platen within said compaction chamber,

supply means for delivering containers to said compaction chamber,

a discharge chamber disposed generally adjacent to said compaction chamber,

movable floor means for separating said compaction cham-

ber from said receiving chamber, whereby when said floor means is in an open position a compacted unit of a plurality of said containers can be transferred from said compaction chamber to said discharge chamber,

second power operated ram means for urging said compacted unit out of said discharge chamber,

said second ram means mounted for movement in a path generally perpendicular to the path of movement of said first ram,

recess creating means secured to said platen, and

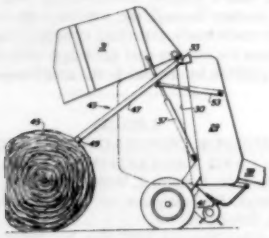
said recess creating means being of sufficient size to receive bundling straps for fork lift handling of said compacted units.

4,483,247

CYLINDRICAL BALER WITH BALE DISCHARGE EJECTOR

Jean-Pierre Coeffic, Ottumwa, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Sep. 27, 1982, Ser. No. 423,757
Int. Cl.³ B30B 5/06
U.S. Cl. 100—88 **17 Claims**



1. In a baler for forming cylindrical bales comprising:

a front section;

a bale discharge gate pivotably mounted to said front section;

gate moving means for moving said gate back and forth between a closed position for bale formation within a bale forming chamber formed between said gate and said front section and an open position for bale discharge;

the improvement comprising:

an ejector comprising a pair of arms, each of said arms pivoted at one end to and externally of said front section and a pusher connected between the other ends of said arms, said ejector moveable between a retracted position and a rearwardly extended position for moving a bale discharged from said chamber from a location on the ground beneath said gate to a location rearward of said gate.

4,483,248

ALUMINUM/STEEL CAN SEPARATOR AND BALER

Arlen J. Ostreng, 1551 Miller Dr., LaCrosse, Wis. 54601

Filed Apr. 4, 1983, Ser. No. 481,749
Int. Cl.³ B30B 9/32
U.S. Cl. 100—99 **10 Claims**

1. A can recycling machine comprising:

a baling chamber, said baling chamber comprising:

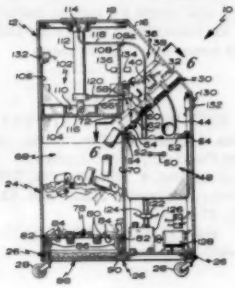
a floor wherein said floor is movable between a first position for compacting cans in said chamber and a second position wherein said floor is below said floor when said floor is in said first position so that removal means may be inserted between a bale and said floor when said floor is in said second position;

an access door;

wedge means associated with said door for maintaining said floor in said first position when said door is closed;

first and second walls adjacent said door, said first and second walls diverging from one another as said walls approach said door;

means for continuously cyclically compacting cans in said chamber; and



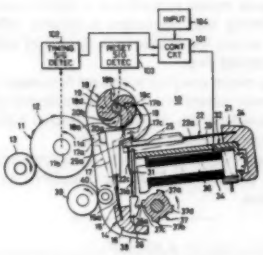
means for admitting no more than a predetermined number of cans into said chamber for each cycle of said compacting means.

4,483,249

HAMMER LOCK RELEASING MECHANISM FOR A PRINTING DEVICE

Takayuki Iwao, Chofu; Takemitsu Ono, Machida, and Yukio Ishikawa, Yamato, all of Japan, assignors to Mitsumi Electric Co., Ltd., Tokyo, Japan

Division of Ser. No. 87,956, Oct. 24, 1979, Pat. No. 4,326,459.
This application Sep. 25, 1981, Ser. No. 296,963
Claims priority, application Japan, Jan. 25, 1979, 54-8067[U]
The portion of the term of this patent subsequent to Apr. 27, 1999, has been disclaimed.
Int. Cl.³ B41J 9/28
U.S. Cl. 101—93.30 **6 Claims**



1. A hammer lock releasing mechanism for a printing device comprising:

(a) a rotary type wheel provided on its outer surface with a plurality of types disposed in the circumferential direction at equal angular intervals, and driven in rotation at a specific speed;

(b) a plurality of printing hammer heads disposed confronting said type wheel and undergoing displacement, during a printing operation, to selectively strike a desired type onto a sheet of paper, thereby carrying out printing, said sheet of paper being fed between said hammer heads and said rotary type wheel, each of said hammer heads having a convex part;

(c) a plurality of first urging means for constantly urging said hammer heads to move in the direction of carrying out a

printing action, each of said first urging means being attached to one of said hammer heads;

(d) a plurality of locking means for locking said hammer heads in a non-printing position, each of said locking means being engageable with a plurality of said hammer heads, thereby preventing said first urging means from discharging their urging force, each of said locking means being attached to one of a plurality of second uring means;

(e) trigger means for displacing said locking means against a force exerted by said second urging means, so as to unlock said hammer heads and permit said hammer heads to carry out said printing action; and

(f) a rotary cam structure rotatable in correspondence with the rotation of said type wheel and engageable by said convex parts of said hammer heads, said rotary cam struoture having a circumferential surface comprising a plurality of sequences of connected portions, each sequence comprising a portion for permitting the corresponding one of said hammer heads to carry out said printing action, a portion for resetting the corresponding one of said hammer heads connected to said portion for permitting said printing action, first and second peripheral portions of equal radius for holding the corresponding one of said hammer heads in a non-printing position, and an intermediate portion having a radius smaller than the radius of and lying between said first and second peripheral portions, said first peripheral portion and said portion for resetting the corresponding one of said hammer heads being connected in a continuous manner, and said second peripheral portion being connected in a discontinuous manner to an ajdacent portion for permitting said printing action, wherein

(i) said portion for permitting said printing action comprises a concave part for permitting said convex part of the corresponding one of said hammer heads, which is unlocked from the non-printing position by said trigger means, to enter therein, thereby permitting said hammer head to rotate under the influence of the corresponding one of said first urging means;

(ii) said portion for resetting the corresponding one of said hammer heads comprises a continuous surface of increasing radius for guiding said hammer head in a direction opposite the direction taken by said hammer head during said printing action so that the corresponding one of said locking means is engageable with said hammer head;

(iii) said first and second peripheral portions comprise surfaces of maximum radius on said rotary cam structure, said maximum radius being such that the corresponding one of said hammer heads is displaced from engagement with said locking means in response to said convex part of said hammer head contacting either of said peripheral portions; and

(iv) said intermediate portion comprises a noncontact portion having a radius less than said maximum radius, such that said convex part of the corresponding one of said hammer heads is not in contact with said noncontact portion when said hammer head is locked by the corresponding one of said locking means.

4,483,250

FLARE MANUAL SAFETY DEVICE

James R. Thurston, and George A. Berkley, both of Brigham City, Utah, assignors to Thiokol Corporation, Chicago, Ill.

Filed Apr. 14, 1983, Ser. No. 485,083
Int. Cl.³ F02K 5/04; F42C 15/00
U.S. Cl. 102—254 **5 Claims**

1. A flare manual safety device comprising:

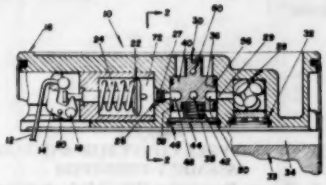
a housing,

a rotor within said housing having at least two positions and having a plurality of passageways therein,

a primer within said housing,

pyrotechnic material within said housing,

said housing having first, second and third port means therein with said primer, said first and second port means and said pyrotechnic material being in alignment but physically separated by said rotor whereby rotation of said rotor to one of said positions to align one of said (passages) passageways with said first and second port means permits ignition of said pyrotechnic material upon ignition of said primer, and rotation of said rotor to another one of said positions to misalign said one passageway prevents accidental or inadvertent ignition of said primer from igniting said pyrotechnic material, another passageway in said rotor and said third port means in said



housing being operative with said rotor in said another position to vent said primer upon accidental or inadvertent ignition thereof,

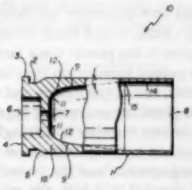
wherein said one passageway in said rotor comprises a diametrically positioned hole, said another passageway comprises a chordal slot in said rotor, and said third port means in said housing comprises holes in said housing parallel to said first port means that are in communication with said chordal slot with said rotor in said another position.

4,483,251

CARTRIDGE FOR SMALL ARMS

Don Spalding, 3645 Buena Vista Dr., Sacramento, Calif. 95825

Filed Nov. 5, 1981, Ser. No. 318,478
Int. Cl.³ F42B 5/28
U.S. Cl. 102—464 **1 Claim**



1. A cartridge for use with a revolver, automatic or submachine gun comprising in combination:

a single piece casing made of brass and having a substantially linear outer wall,

a transition bevel at one outer wall end of said casing terminating in an extractor groove area, said extractor groove area being connected to a base which includes an annular rim, and a primer pocket extending through said base communicating with an interior of said casing through a flash hole, said interior including a powder charge area having a planar bottom wall extending radially outwardly from said flash hole terminating thereafter into a substantially parabolic curved section utilizing parabolic curve axiom that requires discharge forces to travel parallel to the longitudinal centerline of the cartridge, and an interior wall extending forward from said parabolic section, and

wherein said interior wall includes a sloped wall section extending from said parabolic curved section, said sloped wall section in combination with said outer wall narrowing in thickness as it extends away from said parabolic curved section,

wherein said sloped wall section terminates at a transition area which defines a lowermost nesting portion neck for a bullet disposed within said cartridge, forward said transition area thereafter providing a linear inner wall defining a zone of constant thickness with said outer wall,

wherein said sloped wall section defines a zone of increasing thickness from said transition area to said parabolic curved section having a slope of 5–15 degrees,

wherein said parabolic curved section defines a zone of greatest thickness of said wall, and

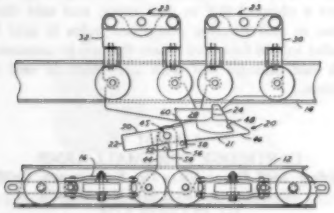
wherein said sloped wall section is linear in longitudinal section.

4,483,252

POWER AND FREE CONVEYOR AND PUSHER ASSEMBLY THEREFOR

Robert A. Pierson, Farmington Hills, Mich., assignor to Jervis B. Webb Company, Farmington Hills, Mich.

Filed Sep. 28, 1982, Ser. No. 425,533
Int. Cl.³ B61B *10/02*
U.S. Cl. 104—172 B **9 Claims**



1. In a power and free conveyor incldluing a power track supporting a driven chain, a load track arranged in generally parallel spaced relation to the power track and having a carrier mounted thereon, a pusher member on the chain, and a driving member on the carrier, one of the pusher and driving members being mounted on a pivot for movement between an operable position in which the one member is drivingly engageable by the other member and an inoperable position in which the one member is not so engageable, and the power and load tracks include an upright portion in which the power track is disposed above the load track and an inverted portion in which the power track is disposed below the load track; the improvement wherein:

biasing means normally urges the movable one of the pusher and driving members to the operable position on each of the upright and inverted portions of the power and load tracks, the biasing means comprising a part of the movable member extending radially from the pivot and having a mass such as to normally urge the movable member to the operable position on one of the upright and inverted portions of the power and load tracks;

a counterweight is supported on the pivot and is pivotable independently of the movable member, the counterweight including a counterweight arm extending radially from the pivot in a direction generally opposite to said part of the movable member and having a mass in excess of the mass of said part;

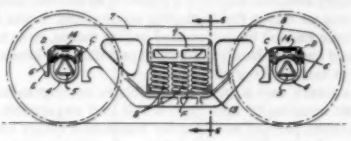
and one-way connecting means between the movable member and the counterweight for normally urging the movable member to the operable position by the counterweight on the other of the upright and inverted portions of the power and load tracks.

4,483,253

FLEXIBLE RAILWAY CAR TRUCK

Harold A. List, 38 W. University Ave., Bethlehem, Pa. 18015

Filed Feb. 16, 1982, Ser. No. 348,922
Int. Cl.³ B61F *3/08, 5/30, 5/38*
U.S. Cl. 105—167 **4 Claims**



1. A vehicle truck assembly, comprising: main truck framing including bolster means extending transversely of the truck for load-bearing association with the axled wheelsets of a wheeled vehicle, and a pair of side frame members each having springs associated with a corresponding end portion of said bolster means to transmit load from the bolster to the associated frame member, and each side frame having means defining a pair of pedestals for load-imposing cooperation with outboard axle portions; roller bearing means for each outboard axle portion, each such roller bearing means being in load-carrying association with a corresponding pedestal; each pedestal having pedestal jaws embracing the associated roller bearing means and the pedestal jaws for the bearings for at least one of the axles having clearance between the pedestal jaws and the associated roller bearing longitudinally of the truck to provide freedom for relative yaw motions of at least one of the truck axles with respect to the side frame members; plank means lying in a substantially horizontal plane and extended transversely of the truck and with opposite end regions of the plank means each extended between the springs and a corresponding side frame member to restrain relative fore-and-aft movement of the side frame members; the plank means being torsionally flexible, thereby providing freedom for relative pitching movement of the side frame members with respect to each other; and yieldable resilient means interposed between the bearing means of at least one axle and its corresponding side frame pedestals, said yieldable means being of stiffness sufficient yieldably to oppose relative yaw motions of the truck axles within said clearance between the pedestal jaws and the roller bearings and thereby yieldingly oppose relative departure of the axles from positions in which the wheelsets are parallel.

2. A vehicle truck assembly, comprising: main truck framing including bolster means extending transversely of the truck for load-bearing association with the axled wheelsets of a wheeled vehicle, and a pair of side frame members each having springs associated with a corresponding end portion of said bolster means to transmit load from the bolster to the associated frame member, and each side frame having means defining a pair of pedestals for load-imposing cooperation with outboard axle portions; roller bearing means for each outboard axle portions, each such roller bearing means being in load-carrying association with a corresponding pedestal; each pedestal having pedestal jaws embracing the associated roller bearing means and the pedestal jaws for the bearings for at least one of the axles having clearance between the pedestal jaws and the associated roller bearing longitudinally of the truck to provide freedom for relative yaw motions of at least one of the truck axles with respect to the side frame members; plank means lying in a substantially horizontal plane and extended transversely of the truck between the side frame members; means at each end of the plank means for rigidly connecting the plank means to the adjacent side frame members and thereby restrain relative fore-and-aft movement of the side frame members; the plank means being torsionally flexible, thereby providing freedom for relative pitching movement of the side frame members with respect to each other; and yieldable resilient means interposed between the bearing means of at least one axle and the corresponding side frame pedestals, said yieldable means being of

stiffness sufficient yieldably to oppose relative yaw motions of the truck axles within said clearance between the pedestal jaws and the roller bearings and thereby yieldingly oppose relative departure of the axles from positions in which the wheelsets are parallel.

4,483,254

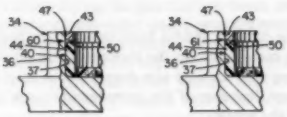
CENTER PLATE STRUCTURE FOR RAILWAY VEHICLE

Roger D. Meadows, Waynesville, N.C., assignor to Dayco Corporation, Dayton, Ohio

Division of Ser. No. 260,880, May 6, 1981, Pat. No. 4,398,330. This application May 20, 1983, Ser. No. 496,372

Int. Cl.³ B61F *5/06, 5/18;* **F16C** *17/04*

U.S. Cl. 105—199 C **8 Claims**



1. In a railway vehicle, having a body provided with a body bolster and a body center plate, said body center plate having a supported planar bottom surface adjoined by a cylindrical outside surface, a truck provided with a truck bolster and a bolster bowl, said bolster bowl having a planar supporting surface adjoined by an upstanding peripheral flange which has a cylindrical inside surface which is adapted to receive said outside surface therewithin, a wear resistant tubular liner disposed in sandwiched relation between said cylindrical surfaces with said body center plate disposed within said bolster bowl, said tubular liner being comprised of an ultra high molecular weight polymeric material and having a top surface, the improvement comprising a continuous metal ring fixed to said flange against a top portion of said inside surface, said metal ring having a continuous substantially frustoconical annular bottom surface which has a central axis which coincides with a central vertical axis through said bolster bowl and which is adapted to engage said top surface of said tubular liner, said frustoconical surface being inclined so that it faces away from said vertical axis and defines a cam surface which serves to urge the top portion of said liner radially toward said flange, said ring serving to prevent vertical cold flow of the polymeric material comprising said tubular liner from between said cylindrical surfaces.

7. In a truck for a railway vehicle having a truck bolster and a bolster bowl, said bolster bowl having a planar supporting surface and an adjoining upstanding peripheral flange which has a cylindrical inside surface, said bolster bowl being adapted to receive therewithin a body center plate provided on a body bolster comprising a body of said vehicle, said body center plate having a supported planar bottom surface adjoined by a cylindrical outside surface, a wear-resistant tubular liner disposed in sandwiched relation between said cylindrical surfaces with said body center plate disposed within said bolster bowl, said tubular liner comprising an ultra high molecular weight polymeric material, the improvement comprising a continuous uninterrupted metal ring fixed to said flange against a top portion of said inside surface, said metal ring having a continuous substantially frustoconical annular bottom surface which has a central axis which coincides with a central vertical axis through said bolster bowl and which is adapted to engage said top surface of said tubular liner, said frustoconical surface being inclined so that it faces away from said vertical axis and defines a cam surface which serves to urge the top portion of said liner radially toward said flange, said ring serving to prevent vertical cold flow of the polymeric material comprising said tubular liner from between said cylindrical surfaces.

4,483,255

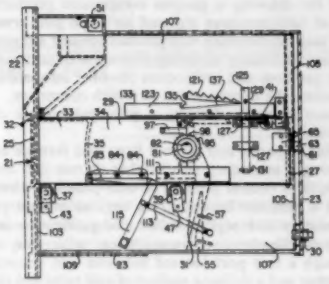
NIGHT DEPOSITORY

William S. Collier, Jr., Land of Lakes, and Lucien Carignan, Newport Richey, both of Fla., assignors to Collier Safe Co., Inc., Odessa, Fla.

Filed Sep. 30, 1982, Ser. No. 430,437

Int. Cl.³ E05G *1/026*

U.S. Cl. 109—66 **14 Claims**



1. An apparatus for depositing items from the exterior to the interior of a wall comprising:

a drawer means for receiving the items on the exterior of said wall and transferring said items to the interior of said wall,

a housing embedded in said wall,

said drawer means being slidably located within said housing and having a closed position,

said housing and said drawer means having openings therein which are in line when said drawer means is in said closed position, and,

rotary means located within said drawer means for transferring said items from said drawer means through said openings,

said rotary means including at least one rotor finger which rotates through said drawer means as said drawer means is closed and transfers any deposited items through said openings.

4,483,256

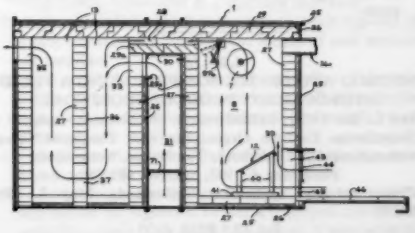
BIOMASS GASIFIER COMBUSTOR SYSTEM AND COMPONENTS THEREFOR

Robert S. Brashear, LaGrange, Ky., assignor to Clayton & Lambert Manufacturing Co., Buckner, Ky.

Continuation of Ser. No. 351,659, Feb. 24, 1982, abandoned. This application Jun. 27, 1983, Ser. No. 508,289

Int. Cl.³ F23B *5/00;* **F23K** *3/00*

U.S. Cl. 110—210 **27 Claims**



1. In an improved biomass gasifier combustor system of the type which conventionally includes a gasification chamber for burning a biomass fuel therein to form a volatile producer gas; primary air inlet means connected to said gasification chamber

for introducing primary ambient air into said gasification chamber sufficient to permit combustion of said fuel in a limited combustion zone; a gas combustion chamber communicating with said gasification chamber for receiving said producer gas therein; secondary air inlet means connected to said combustion chamber for introducing secondary ambient air into said combustion chamber for mixing with said producer gas sufficient to permit combustion of said producer gas; and suction means connected to an exhaust port of said combustion chamber for drawing a gaseous combustion product of the mixture of said producer gas and air from said combustion chamber and for directing said product toward a remote location for use as a heating or drying medium and for drawing said producer gas from said gasification chamber into said combustion chamber, the improvement of which comprises:

a furnace assembly defining a principal hollow chamber therein;

a housing, separate and distinct from said furnace assembly defining a secondary air chamber therein and being disposed in a central portion of said principal chamber to form a partition between two regions of said principal chamber, which regions define said gasification and combustion chambers communicating with one another through a first port located between said secondary air chamber and a defining surface of said principal chamber, said housing further defining a second port therein which communicates between said secondary air and combustion chambers, and

means for introducing a quantity of secondary ambient air into said secondary air chamber.

24. In a biomass gasifier combustor system of the type which conventionally includes a gasification chamber for burning a biomass fuel therein to form a volatile producer gas, primary air inlet means communicating with said gasification chamber, a gas combustion chamber communicating with said gasification chamber, secondary air inlet means communicating with said combustion chamber, and suction means communicating with said combustion chamber for drawing a gaseous combustion product from said combustion chamber and directing said product toward a remote location for use as a heating or drying medium and for drawing said producer gas from said gasification chamber into said combustion chamber, means for controlling the operation of said system comprising

first means for sensing the temperature at said remote location,

second means connected to said first temperature sensing means for comparing the temperature of said remote location with a preselected maximum temperature, and

adjustable gas diverting means connected to a discharge end portion of said suction means for diverting said gaseous combustion product, upon command, from said remote location to ambient atmosphere, and

driving means responsively connected to said second means and operatively connected to said diverting means for diverting said product from said remote location to ambient atmosphere when the temperature of said remote location is greater than said preselected maximum temperature.

4,483,257

METHOD AND DEVICE FOR PREPARING A FLUID HYDROCARBON PRODUCT FROM COAL

Johan L. den Otter, Leidschendam, Netherlands, assignor to Nederlandse Centrale Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek, The Hague, Netherlands

Filed May 4, 1983, Ser. No. 491,366

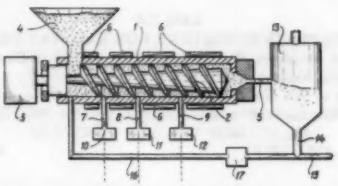
Claims priority, application Netherlands, May 4, 1982, 8201824

Int. Cl.³ F23K *1/00*

U.S. Cl. 110—218 **11 Claims**

1. In a method of preparing a hydrocarbon product which is fluid under normal conditions by continuously feeding coal into a screw extruder having a front end and reacting the coal therein at elevated pressure and temperature, optionally in the presence of a catalyst, with hydrogen and/or hydrogen-containing compounds, followed by a step of separating at least the greater part of the hydrocarbons which are fluid under normal conditions from the reaction product leaving the extruder,

the improvement comprising



adding the catalyst and/or hydrogen and/or hydrogen-containing compounds to the contents of the extruder on at least one spot situated at a distance of at least three times the inner diameter of the extruder upstream of the front end of the screw.

4,483,258

INCINERATOR STEAM GENERATION SYSTEM

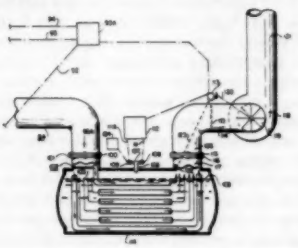
Floyd C. Johs; Scott R. Taylor, both of Ogden, and Gerald B. Taggart, Eden, all of Utah, assignors to Clear Air, Inc., Ogden, Utah

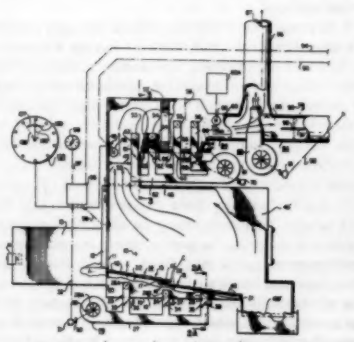
Division of Ser. No. 396,421, Jul. 8, 1982, Pat. No. 4,452,152.

This application Jul. 20, 1983, Ser. No. 515,570

Int. Cl.³ F23G *3/00*; F23N *1/08*; F23J *11/00*

U.S. Cl. 110—235 **1 Claim**





1. In combination, a horizontally elongated furnace having grate system means for advancing debris to be incinerated through a drying zone, then an incineration zone, and finally

through a residual zone; throat structure; a secondary chamber means coupled via said throat structure to said furnace over said drying zone for receiving vapors and gases from said furnace and subjecting combustibles therein to combustion to produce a hot gases stream; boiler means for producing steam; conduit means for conducting said hot gases stream proximate said boiler means in heat-exchange relationship therewith for producing such steam; a dump stacking rising from and teed into said conduit means; an external-ambient-air receiving adjustable blower means provided with an air-exhaust shroud upwardly communicating interiorly with said dump stack for regulating gases flow therethrough; and final conduit means coupled to said boiler means for receiving and exhausting the spent gases of said stream once said heat-exchange relationship has been satisfied, and wherein adjustable damper means is provided in said conduit means between said dump stack and said boiler means, whereby selectively to preclude thermal shock to said boiler during furnace start-up times, and wherein said throat structure is provided with a pressure sensing means; and means responsive to said pressure sensing means and coupled to said blower means for regulating gases' stream condition and flow through said boiler means; and wherein said boiler has a steam delivery means, said final conduit means including a damper, and means coupled to said steam delivery means and responsive to externally imposed steam requirements thereof for actuating said damper in said final conduit means.

4,483,259

METHOD AND COMPOSITION FOR REMOVAL OF GASEOUS CONTAMINANTS PRODUCED IN COMBUSTION OF FOSSIL FUELS OR PRESENT IN REDUCING GASES

Benjamin Molayem, Silver Spring, and David Garrett, Fort Washington, both of Md., assignors to Benmol Corporation, Alexandria, Va.

Continuation-in-part of Ser. No. 280,978, Jul. 7, 1981, Pat. No. 4,388,877. This application Jun. 20, 1983, Ser. No. 506,128
The portion of the term of this patent subsequent to Jun. 21, 2000, has been disclaimed.
Int. Cl.³ F23J *11/00*
U.S. Cl. 110—345 **13 Claims**

1. A method for catalytically converting unburned hydrocarbons and carbon monoxide to carbon dioxide and reducing nitrogen oxides to nitrogen during or subsequent to the combustion of fossil fuels while absorbing sulfur oxides, which comprises contacting gaseous products of said combustion with a catalytic material for catalyzing said conversion and reduction reactions, said catalytic material being physically combined onto an adsorbent matrix selected from the group consisting of calcium aluminate, calcium aluminate cement, barium titanate, and calcium titanate.

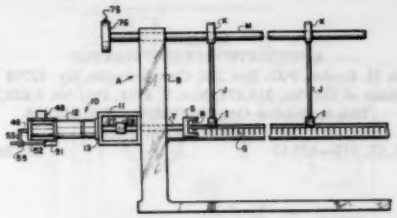
4,483,260

HYDRAULICALLY OPERATED LINEAR ACTUATOR AND AN ELECTRICAL CONTROL SYSTEM

Donald A. Gallant, 2611 Danbury St., Charlotte, N.C. 28211

Filed Aug. 27, 1981, Ser. No. 297,077
Int. Cl.³ D05C *15/30*
U.S. Cl. 112—79 R **37 Claims**

15. An electrical control system for generating sequential control signals for commanding the stepwise positioning of an object comprising means for generating a series of electrical signals providing differing magnitude indications proportional to stepwise positions of said object, means selecting a signal from said series, means comparing the magnitude indicated by said selected signal with the magnitude of a pre-existing signal whose magnitude is proportional to the pre-existing position of said object to determine the difference between said magnitudes, means comparing said magnitude difference with a preset maximum magnitude difference, means utilizing the lesser of said differences to select, respectively, either the selected signal or the pre-existing signal combined with the preset maximum magnitude difference, to produce a resulatant control signal, means responsive to said resultant control signal to position an object in proportion to the magnitude of said resultant control signal as limited, means responsive to the



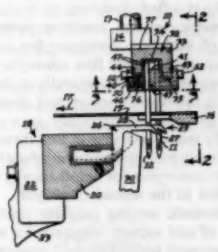
magnitude indicated by said selected signal being different from the magnitude of said resultant control signal to interrupt said signal selecting means and thereby maintain said selected signal for processing in said control system as the next selected signal.

4,483,261

SEGMENTAL NEEDLE BAR FOR MULTIPLE NEEDLE TUFTING MACHINE

Jerry T. Green, Hixson, and Max M. Beasley, Chattanooga, both of Tenn., assignors to Tuftco Corporation, Chattanooga, Tenn.

Filed Feb. 7, 1983, Ser. No. 464,410
Int. Cl.³ D05C *15/12*
U.S. Cl. 112—79 R **5 Claims**



1. In a multiple needle tufting machine having a plurality of uniform needles, each needle having a pointed end portion and a shank adjacent its opposite end portion, and a needle drive member, a needle bar assembly comprising:

(a) an elongated needle mounting bar member of predetermined length connected to the needle drive member for reciprocable movement in a stitching direction,

(b) a plurality of elongated bar segments, each segment of a length substantially less than the length of said mounting bar member,

(c) each needle bar segment having a plurality of elongated needle holes therethrough having parallel longitudinal axes, each needle hole being adapted to coaxially receive the shank of a needle,

(d) needle securing means for holding a needle in a corresponding needle hole,

(e) a first member, including said mounting bar member or said needle bar segments, having a U-shaped cross-section including a main body portion and a pair of legs projecting from said main body portion,

(f) a second member, including the other of said needle bar segments or said mounting bar member, having recesses receiving said corresponding legs,

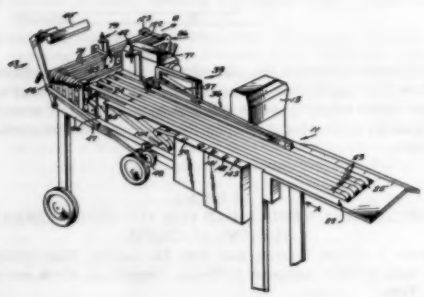
(g) bolt members extending through said legs and said reces-

ses for detachably securing said first member and said second member, so that said needle bar segments are secured end-to-end along said mounting bar member and the longitudinal axes of said needle holes are parallel to said stitching direction.

4,483,262
AUTOMATIC SLEEVE MAKING

John H. Keeton, P.O. Box 296, Campbellsville, Ky. 42718

Division of Ser. No. 319,671, Nov. 9, 1981, Pat. No. 4,428,315. This application Oct. 17, 1983, Ser. No. 542,486
Int. Cl.³ D05B *21/00, 27/00*
U.S. Cl. 112—121.12 **19 Claims**



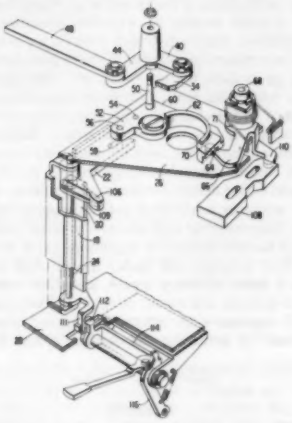
1. An assembly for acting upon cloth comprising:
a first conveyor disposed for conveying cloth generally horizontally in a first direction;
a first automatic sewing machine operatively disposed alongside of said first conveyor for acting upon cloth being transported by said first conveyor;
a second conveyor disposed generally at the end of said first conveyor in the first direction, and disposed for conveying cloth generally horizontally in a second direction substantially transverse to said first direction;
means operatively mounted at an interface between said first and second conveyors for automatically transfering cloth from the first to the second conveyor;
a second automatic sewing machine operatively disposed along side of said second conveyor for acting upon cloth being transported by said second conveyor;
said first conveyor including a plurality of distinct, substantially parallel conveying belts spaced from each other in said second direction;
a plurality of stationary surface interleaved with, and substantially parallel to, said conveyor belts; and means for mounting said conveyor belts for movement from a first position wherein said conveyor belts are raised with respect to said stationary surfaces, to a second position wherein said conveyor belts are depressed with respect to said stationary surfaces.

4,483,263
NEEDLE BIGHT CONTROL MECHANISM FOR A SEWING MACHINE

William Weisz, Tenafly, N.J., assignor to The Singer Company, Stamford, Conn.

Filed May 29, 1984, Ser. No. 614,580
Int. Cl.³ D05B *3/02, 3/06*
U.S. Cl. 112—158 A **6 Claims**

1. Mechanism for controlling needle bight in a sewing machine including a bell crank with an input and an output arm, a needle bar actuating link operably connected to the output arm of the bell crank, a carrier for the bell crank, means mounting the bell crank on the carrier for pivotal movement about an axis thereon, means mounting the carrier for movement about a different axis affixed in the machine, means for locking the carrier in a fixed position in the machine to prevent pivotal movement about said fixed axis and for unlocking the carrier to permit the said pivotal movement thereof, means for imparting needle bight controlling movements for pattern sewing to the input arm of the bell crank when the carrier is locked to cause

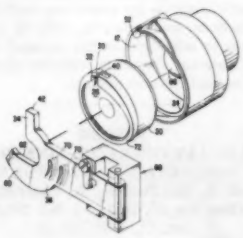


the bell crank to pivot on the carrier and move the needle bar actuating link, and means for imparting needle bight controlling movements to the input arm of the bell crank and to the carrier when the carrier is unlocked to thereby cause the bell crank and carrier to pivot on their respective axes and influence movement of the needle bar actuating link.

4,483,264
HANGING BOBBIN CASE

Stanley J. Ketterer, Jamesburg, N.J., assignor to The Singer Company, Stamford, Conn.

Continuation-in-part of Ser. No. 170,389, Jul. 21, 1980, abandoned. This application Apr. 1, 1982, Ser. No. 364,545
Int. Cl.³ D05B *57/26*
U.S. Cl. 112—231 **4 Claims**



1. A sewing machine having a frame, a hook adapted for rotation about a horizontal axis within said frame, a thread carrying needle supported in said frame for endwise reciprocation in a path substantially radially of said hook axis, said hook having formed in one end thereof interior walls defining an open ended cavity, a bobbin case adapted for positioning within said cavity, a support means carried by said frame for constraining said bobbin case in sewing position within said hook cavity free of contact with any moving interior walls of said hook cavity, a first bobbin case contacting element on said support means for sustaining said bobbin case in the vertical direction and arranged adjacent to the path of reciprocation of

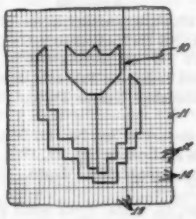
said needle, a support surface complemental to said first bobbin case contacting element formed above the center of gravity of said bobbin case, guide means carried on said support means for limiting sideways movement of said bobbin case and including a second bobbin case contacting element, a guided surface formed on said bobbin case complemental to said guide means, said guide means being arranged radially outward from the axis of the hook and at an angle greater than 180° from the path of needle reciprocation considered in the direction of rotation of said hook.

4,483,265

CROSS-STITCH DESIGN PROCESS

Kathy A. Weidmann, 12732 Spinnaker St., Garden Grove, Calif. 92640

Filed Sep. 27, 1982, Ser. No. 425,068
Int. Cl.³ D05C *3/00*
U.S. Cl. 112—266.1 **9 Claims**



1. The method of producing an embroidered work made up of cross-stitches of predetermined dimensions comprising the steps of

producing on a first medium a pattern,

establishing the positions of crosses of said predetermined dimension aligned in parallel rows which can be substantially encompassed by and at least approximating the contour of said pattern,

marking on a second medium crosses corresponding to those so encompassed by said pattern,

and then stitching over said crosses as marked on said second medium cross-stitches of said predetermined dimension, thereby to produce said pattern on said second medium.

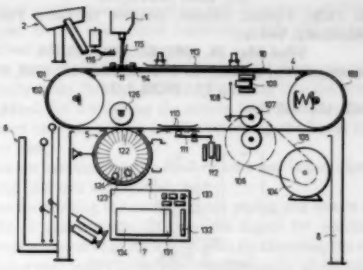
4,483,266

SEWING MACHINE WITH SELECTIVELY CONTROLLED CONVEYOR BELT FEED

Sándor Olasz; Dénes Szalay; József Kovács, and Olivér Kocsis, all of Budapest, Hungary, assignors to Csepel Muvek Jarmu Es Konfekcioipari Gepgyara, Budapest, Hungary

Filed May 19, 1981, Ser. No. 265,081
Claims priority, application Hungary, May 29, 1980, 1349/80
Int. Cl.³ D05B *27/00*
U.S. Cl. 112—304 **7 Claims**

1. In a sewing machine having a power-driven needle and an endless feed belt for moving workpieces beneath the needle; the improvement comprising means alternately to stop and advance the belt, means for measuring the movement of the belt during each advance of the belt, means responsive to said measuring means to actuate said belt stopping means thereby to ensure that the belt moves only a predetermined distance beneath said needle each time the belt advances, and means to



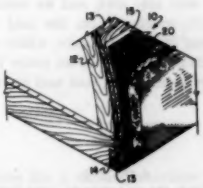
drive the needle and the belt independently of each other whereby the needle can operate when the belt is stopped.

4,483,267

WOODEN BOAT HULL CONSTRUCTIONS, AND METHOD FOR SUCH CONSTRUCTIONS

William H. Seemann, III, 4222 Baronne St., New Orleans, La. 70115

Continuation-in-part of Ser. No. 282,278, Jul. 10, 1981, abandoned, which is a continuation of Ser. No. 066,288, Aug. 13, 1979, abandoned. This application Dec. 15, 1982, Ser. No. 449,992
Int. Cl.³ B63B *5/02, 5/24*
U.S. Cl. 114—357 **11 Claims**



1. In apparatus characterized as a vessel useful for navigating a body of water, the combination which comprises

a laminated structure comprised of

a wooden hull equal to or greater than three-fourths inch in thickness,

a high strength fiber reinforced plastic skin which completely covers at least that portion of the hull wetted by, and in contact with the water, having an outer surface and an inner surface, and

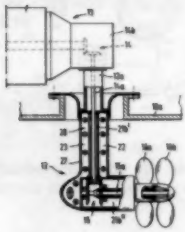
an elastomeric adhesive which after curing is capable of stretching at least 100 percent of its length on application of a force and which chemically bonds the outer surface of the wooden hull to the inner surface of the fiber reinforced plastic skin to maintain said fiber reinforced plastic skin in water-tight proximity to the hull to provide increased structural strength, and a skin which protects the wooden hull aginst rot and marine organisms.

4,483,268

METHOD OF MANUFACTURING BOAT PARTS SUBMERGED WHEN IN USE, AND PART PRODUCED BY THE METHOD

Heinz Pichl, Upsala, Sweden, assignor to Volvo Penta AB, Gothenburg, Sweden

Filed May 18, 1982, Ser. No. 379,350
Claims priority, application Sweden, May 21, 1981, 8103204
Int. Cl.³ B63B *5/24*
U.S. Cl. 114—65 R **14 Claims**



1. A submersible lower unit of a marine propulsion assembly, comprising a rigid inner metallic skeleton non-streamlined outer surface structure including a first pressure-resistant body extending generally vertically between an upper end and a lower end opening and defining a generally cylindrical first inner cavity, a second pressure-resistant body extending generally horizontally between a forward end and a rear end opening and defining a generally cylindrical second inner cavity, said bodies and cavities being connected one with another at a place of interconnection at their said lower and forward ends and accommodating power transmission means drivable by a motor unit located adjacent said upper end, said power transmission means comprising generally vertical, rigid drive shaft means located in said first cavity, generally horizontal rigid drive shaft means located in said second cavity, and a bevel gear operatively interconnecting said vertical and horizontal drive shaft means and located at said place of interconnection, driving propeller means mounted on said horizontal driving shaft means aft of said rear end, and an outer coating of a watertight, dielectric substance on the said inner skeleton non-streamlined outer surface structure, which coating tightly envelops said structure and defines an outer final shape and face which is streamlined throughout said lower unit.

4,483,269

FIXTURE FOR USE IN FLUXING, SOLDER COATING AND HOT AIR LEVELLING

William H. Down, Quebec, Canada, assignor to Electrovert, Ltd., Ontario, Canada

Filed May 29, 1981, Ser. No. 268,357
Int. Cl.³ B05C *13/02*
U.S. Cl. 118—503 **11 Claims**

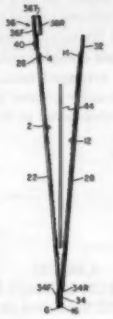
1. A fixture for holding flexible printed circuit substrates which are to be immersed in a bath of molten solder, comprising:

a rear titanium metal wire mesh screen having a top, a bottom, and two sides;

a front titanium metal wire mesh screen having a top, a bottom, and two sides;

means for hingedly connecting the rear and front screens together adjacent the bottoms thereof; the titanium material of said front and rear screens being non-wettable by and capable of withstanding the temperature of molten solder; and

means for detachably securing the tops of the rear screen and the front screen such that the metal wire meshes are



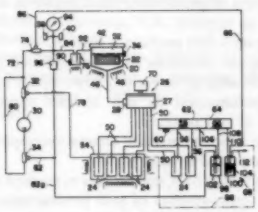
closely adjacent each other with a substrate held therebetween.

4,483,270

APPARATUS FOR EMBEDDING BIOLOGICAL SPECIMENS IN PARAFFIN OR THE LIKE PREPARATORY TO MICROSCOPICAL EXAMINATION

Matsumi Toya, and Toshiyasu Takeuchi, both of Nagano, Japan, assignors to Kabushiki Kaisha Tiyoda Seisakusho, Nagano, Japan

Continuation-in-part of Ser. No. 413,312, Aug. 31, 1982, abandoned. This application Sep. 29, 1982, Ser. No. 426,573
Claims priority, application Japan, Sep. 3, 1981, 56-130358[U]; Sep. 3, 1981, 56-130359[U]; Sep. 3, 1981, 56-137840
Int. Cl.³ B05C *3/00*; B08B *3/00*
U.S. Cl. 118—694 **9 Claims**



1. An apparatus for automatically pretreating biological specimens and embedding same in paraffin or like substance for the preparation of blocks to be cut into sections for microscopical examination, said apparatus comprising:

(a) a processing vessel for receiving a biological specimen to be processed into a block, the processing vessel being openably closed hermetically;

(b) a plurality of reagent vessels for containing reagents for processing the biological specimen in the processing vessel;

(c) selector valve means for placing selectively the reagent vessels in and out of communication with the processing vessel in a prescribed sequence;

(d) an air pump for evacuating the processing vessel in order to cause introduction therein of the successive reagents from the reagent vessel via the selector valve means, and for delivering gas under pressure into the processing vessel in order to discharge the reagents therefrom back into the reagent vessels;

(e) directional control valve means for selectively causing the pump to evacuate and pressurize the processing vessel;

(f) a level sensor on the processing vessel for setting the

pump out of operation and causing the selector valve means to block communication between the processing vessel and one of the reagent vessels when the reagent from the latter is drawn into the evacuated processing vessel to a predetermined level;

(g) pressure switch means responsive to the pressure of the pressurized gas delivered from the pump into the processing vessel in order to cause the selector valve means to reestablish communication between the processing vessel and one of the reagent vessel from which the reagent has been drawn into the processing vessel, the pressure switch means being further responsive to a pressure drop upon complete discharge of the reagent from the processing vessel in order to set the pump out of operation and to cause the selector valve means to communicate the processing vessel with the next reagent vessel;

(h) overflow vessel means for receiving any reagent overflowing from the processing vessel and at least some of the reagent vessels, at least one overflow vessel means being located on a line between the air pump and the processing vessel; and

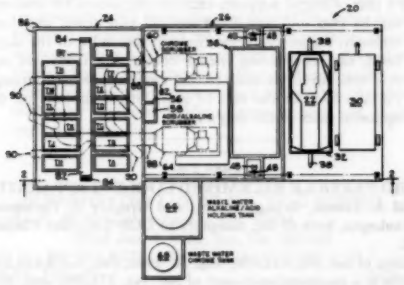
(i) scrubbing means for scrubbing the toxic gases emitted in the apparatus prior to release to atmosphere, said scrubbing means comprising a hermetically closed water vessel for containing water and an absorbent vessel for containing an absorbent, said water vessel being connected to the headspace of the processing vessel through the overflow vessel means provided between the air pump and the processing vessel and to some of the reagent vessels, the absorbent vessel being in constant communication with the headspace of the water vessel and with atmosphere.

4,483,271

CLOSED LOOP PROCESSING OF MATERIALS

Harry L. Eidschun, San Jose, and Wilfred E. Montemayor, San Lorenzo, both of Calif., assignors to FMC Corporation, Chicago, Ill.

Filed Aug. 19, 1983, Ser. No. 524,718
Int. Cl.³ B05D *15/00*
U.S. Cl. 118—698 **26 Claims**



1. In a closed loop apparatus for processing an article, comprising:

means defining a plurality of liquid supply tanks each containing a supply of liquid different from that in the other supply tanks;

means defining a processing tank having the article to be processed therein;

means defining selectively operable valved supply piping having a plurality of branches connecting each of said supply tanks to said processing tank,

means defining selectively operable valved return piping having a plurality of branches connecting said processing tank to selected ones of said supply tanks;

said return piping means including an upright return manifold having a convex bottom wall, a ported top wall communicating with a return pump and a plurality of valved return ports connected to an associated supply tank or to an associated drain sump, each return port having its lowermost surface positioned at an elevation which gravitationally receives and discharges all flowable liquid within said return manifold when said associated valved return port is open;

means for circulating one liquid chemical from one of said supply tanks through said supply piping into the processing tank for contacting the article therein for a predetermined interval of time and for returning the liquid to said one tank;

means for terminating the flow of said one liquid chemical from said one supply tank; and

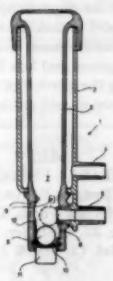
means for purging at least the return piping and return manifold of substantially all flowable liquid for minimizing contamination of said other liquids by cleansing the return piping and return manifold of substantially all of said one liquid and returning the purged liquid to said one supply tank.

4,483,272

TEAT CUP FOR A MILKING MACHINE

Guido A. Tonelli, Södertälje, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed Mar. 3, 1983, Ser. No. 471,677
Claims priority, application Sweden, Mar. 4, 1982, 8201338
Int. Cl.³ A01J *5/08*
U.S. Cl. 119—14.32 **10 Claims**



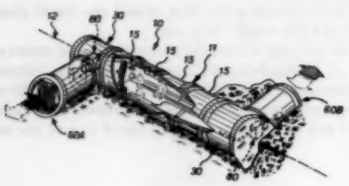
1. A teat cup for a milking machine which comprises a casing, a liner within the casing and forming therewith a pulsation chamber, the liner having a teat-receiving opening at its upper end, a first connection piece for connecting said chamber to a pulsating vacuum, a second connection piece for connecting the interior of the liner to a milk-transport vacuum, a valve seat through which said second connection communicates with the interior of the liner at its lower portion, the lower end of the teat cup defining a valve housing, and a movable valve body in the housing normally held in a displaced position from said seat but located for movement into a closing position where it is held against said seat by a vacuum in said second connection piece creating a rush of air through said liner opening, the valve body in said displaced position leaving an unobstructed passage for flow of milk through the liner to said second connection piece, there being a bleed passage between said second connection piece and the interior of the liner for adjustment of the vacuum within the liner while the valve body is in said closing position, whereby said body returns to its displaced position.

4,483,273

SHELTER PRESSURIZATION AND FILTER INSTALLATION

Guy Develle, Domont, and Alain Regnier, Bezons, both of France, assignors to Sofiltra-Poelman, La Garenne Colombes, France

Filed Nov. 8, 1982, Ser. No. 439,940
Claims priority, application France, Feb. 26, 1982, 82 03190
Int. Cl.³ E05G 3/00; B01D 46/12
U.S. Cl. 109—1 S 3 Claims



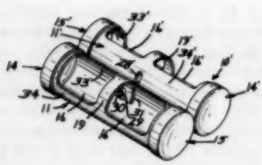
1. A pressurization and filter installation for shelters of the type having a substantially horizontal tubular tunnel, said installation comprising an entry-exit section, an entry-exit airlock communicating with said entry-exit section, means for pressurizing said entry-exit airlock to a pressure higher than the normal pressure external of said shelter, an armored door on the outside of said airlock, a sealed door on the inside of said airlock, a filter unit disposed in said airlock and comprising an absolute filter and an activated carbon filter each including an enclosure for housing filtration elements and having entry and exit openings through which air passes, a box in which said enclosure is disposed, sealing means adjacent said exit opening for providing a seal between said enclosure and said box, a frame, support means for supporting said frame, cam means mounted on said support means, means for rotating said cam means to urge said frame against said enclosure and thereby urge said enclosure against said box to establish said seal, and means for pressurizing the interior of said shelter to a pressure higher than the pressure in said airlock.

4,483,274

ADJUSTABLE FEEDING UNIT

Alfred J. Zmolek, and Douglas F. Van Der Voort, both of Elroy, Wis., assignors to Merrick Foods, Inc., Middleton, Wis.

Filed Dec. 27, 1982, Ser. No. 453,791
Int. Cl.³ A01K 5/01
U.S. Cl. 119—61 8 Claims



3. An apparatus for feeding animals, said apparatus comprising:

a body having a solid wall defining a generally circular cross-section with a generally hollow interior;

said wall defining at least two spaced-apart openings for allowing access by an animal to said interior;

securing means in said wall generally opposite said openings for removably mounting said body to a supporting structure, said means including means for adjustably positioning said wall with said openings oriented in selected ones of various positions relative to the supporting structure; and

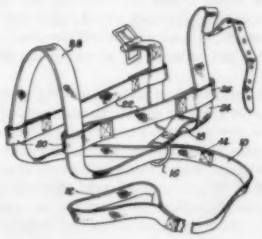
said body being secured in back-to-back relationship with a body of a like apparatus with said body being the supporting structure, said positioning means for the respective openings of each of said bodies being independently adjustable with respect to each other.

4,483,275

TRAINING HALTER FOR ANIMALS

Alice A. De Groot, P.O. Box 340, Sandia Park, N. Mex. 87047

Filed Feb. 17, 1983, Ser. No. 467,316
Int. Cl.³ A01K 25/00; B68B 1/02
U.S. Cl. 119—130 3 Claims



1. An training halter for dogs comprising:

(a) a loop member for encircling the dog's muzzle;

(b) a leash connected to said muzzle loop;

(c) a unitary collar member shaped and dimensioned to completely surround the neck of the dog, and having means for securing the collar member around the neck;

(d) said collar member supporting a ring cinch, said loop member having its lower portion passing through said ring cinch, and being connected to said leash, whereby tensioning said leash tightens down the loop member on the muzzle of the dog; and

(e) a pair of lateral supports each having means for connecting its rear end and front end to said collar and loop member, respectively, on the opposite sides of the dog's head, said connecting means comprising front end and rear end slip loops, each of said members passing through the slip loop at the end of each lateral support on the opposite sides of the dog's head.

4,483,276

FLUID PARTICLE BACKMIXED COOLING APPARATUS

David A. Lomas, Arlington Hts., and Gregory J. Thompson, Waukegan, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 412,698, Aug. 30, 1982, Pat. No. 4,439,533, which is a continuation-in-part of Ser. No. 273,296, Jun. 15, 1981, Pat. No. 4,353,812. This application Mar. 16, 1984, Ser. No. 590,132
Int. Cl.³ F23C 11/02; F22B 3/02
U.S. Cl. 122—4 D 4 Claims

1. Apparatus for cooling hot fluidized solid particles which apparatus comprises in combination:

(a) a vertically oriented combustion chamber;

(b) a disengagement chamber located superadjacent to and above said combustion chamber and in communication therewith;

(c) a fluid particle collection section at the bottom of said disengagement chamber;

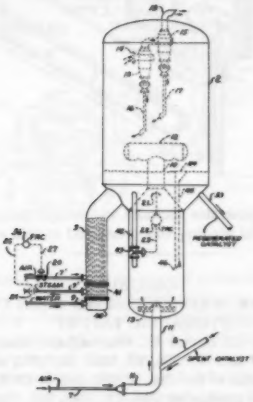
(d) a shell and tube heat exchanger of vertical orientation, remote from said disengagement chamber, having the shell closed at the bottom and having the upper portion of the shell of said heat exchanger in sealed communication with said disengagement chamber such that particles can

circulate to and from said disengagement chamber through said shell;

(e) a fluidizing gas inlet conduit connected to a bottom portion of the shell side of said heat exchanger, such that fluidizing gas can pass into said shell side and maintain a continuously backmixed fluidized particle bed therein;

(f) inlet and outlet conduits connected to said tubes of said heat exchanger, such that a cooling fluid can flow through said tubes; and

(g) a control valve placed in said fluidizing gas inlet conduit and a control system comprising means to sense the quantity of said cooling fluid being removed from said tubes which quantity is controlled by the duty of said heat



exchanger, control means having an adjustable set point connecting with said sensing means capable of comparing the sensed quantity of said cooling fluid being removed with a predetermined set point to generate a controller output signal, and means for transmitting said output signal to said control valve whereby the latter is adjusted responsive to said quantity of said cooling fluid being removed, thereby regulating the flow of fluidizing gas into said heat exchanger and the quantity of particles circulating to and from said disengagement chamber through said heat exchanger, thereby regulating the heat transfer coefficient between the outside surface of the tubes of said heat exchanger and said fluidized particle bed, and thereby regulating said duty.

4,483,277

SUPERHEATED LIQUID HEATING SYSTEM

Eugene W. Perkins, Dawsonville, Ga. 30534

Filed Jun. 2, 1983, Ser. No. 500,343

Int. Cl.[3] **F22B** *3/06;* **F28C** *3/00;* **F24C** *9/00*

U.S. Cl. 122—26 **2 Claims**

1. A heating system comprising:

(a) a first liquid heater comprising a chamber having a rotor rotatably mounted therein, and having an inlet port,

(b) a second liquid heater comprising a chamber having a rotor rotatably mounted therein and having an inlet port,

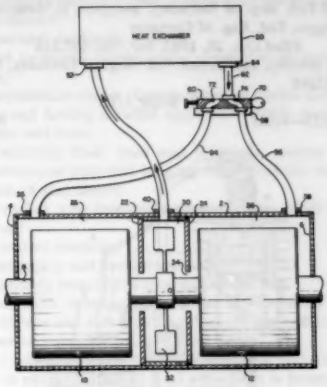
(c) a pump chamber and a pump rotatably mounted therein, and having an outlet port,

(d) a heat exchanger comprising tubing having inlet and outlet ports, and

(e) means for alternately

i. connecting the outlet port of the pump chamber through the heat exchanger tubing to the inlet port of the first liquid heater and simultaneously disconnecting the second liquid heater from the heat exchanger tubing, and

ii. connecting the outlet port of the pump chamber through the heat exchanger tubing to the inlet port of the second liquid heater and simultaneously disconnect-



ing the first liquid heater from the heat exchanger tubing.

4,483,278

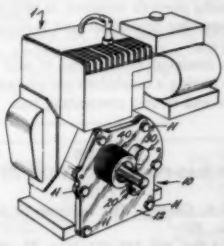
FULL VIEW ENGINE COVER

Stephen J. Kolacz, 4047 Meadow Way., Marietta, Ga. 30066

Filed May 10, 1983, Ser. No. 493,210

Int. Cl.[3] **F02B** *75/34;* **F02F** *1/00*

U.S. Cl. 123—41.33 **15 Claims**



1. A transparent cover for an engine comprising:

(a) first means comprising a plate means dimensioned to cover an opening in said engine;

(b) second means removably attaching said plate means to said engine;

(c) said plate means being made of a heat resistant material whereby said engine may be operated in a normal fashion without damaging said cover;

(d) main bearing means rigidly mounted on said plate means, said main bearing means being located on said plate means so as to support in bearing relation a drive shaft of said engine, and

(e) said main bearing means including a bearing housing in which is mounted a main bearing, said bearing housing including heat dissipating fin means as an integral part thereof.

4,483,279

SINGLE-CYLINDER MOTOR

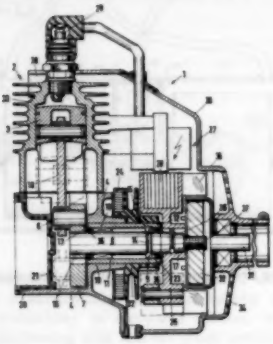
Gisbert Köhler, Fellbach, and Michael Leuchte, Herrenberg, both of Fed. Rep. of Germany, assignors to Andreas Stihl, Waiblingen, Fed. Rep. of Germany

Filed Oct. 28, 1982, Ser. No. 437,314

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1981, 3143246

Int. Cl.³ F02P 1/02

U.S. Cl. 123—41.65 **8 Claims**



1. A single-cylinder motor comprising:

a piston-cylinder unit including a cylinder and a piston slidably engaging said cylinder, and a connecting rod having an end pivotally connected to said piston;

a preassembled crankshaft unit including: a continuous single sleeve; a crankshaft arranged in said sleeve so as to project outwardly beyond the respective ends thereof; and, bearing means longitudinally spaced along said crankshaft and in contact with said crankshaft and said sleeve for rotatably mounting said crankshaft in a spaced relationship to and in said sleeve so as to secure said crankshaft against axial movement relative to said sleeve;

a crankcase defining an opening;

said sleeve being press-fit mounted in said opening whereby said preassembled crankshaft unit is securely held in said crankcase; and,

a crank web mounted on one end of said crankshaft, said crank web having a crankshaft pin pivotally connected to an opposite end of said connecting rod.

4,483,280

PORTABLE GAS-POWERED TOOL WITH LINEAR MOTOR

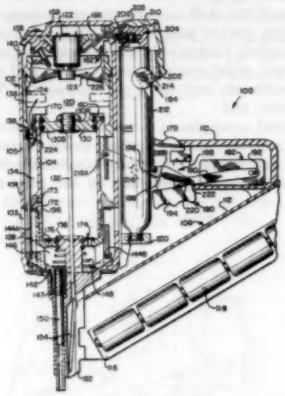
Milovan Nikolich, Chicago, Ill., assignor to Signode Corporation, Glenview, Ill.

Continuation of Ser. No. 227,193, Nov. 22, 1981, abandoned. This application Nov. 14, 1983, Ser. No. 550,521

Int. Cl.³ F02B 71/04

U.S. Cl. 123—46 SC **12 Claims**

1. A self-starting portable tool comprising a housing, a cylinder in said housing, a piston in said cylinder and forming a motor member, a working member attached to said piston, a combustion chamber formed within said housing and having said piston defining a wall portion thereof, a turbulence generator in said chamber, means for supplying fuel and air to said chamber, means for operating said generator independent of said piston such that premixing and turbulence are imparted to the air and fuel in said chamber before initial ignition of the mixture in said chamber and before initial movement of said piston, and means for igniting and exploding said mixture in said combustion chamber to deive said piston to operate said working member, whereby the initial and all subsequent strokes of the motor member are operated at substantiall full energy output and further wherein the turbulence generator consists of a fan disposed in said chamber and the means for



operating said generator includes an electric motor self-contained within said housing and connected to said generator.

4,483,281

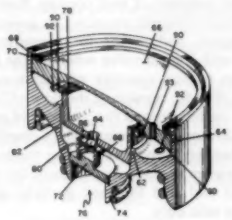
POPPET VALVE SPRING RETAINER WITH INTEGRAL HYDRAULIC TAPPET

Alfred A. Black, 126 Beaver St., Framingham, Mass. 01701

Continuation of Ser. No. 356,782, Mar. 10, 1982, abandoned, which is a division of Ser. No. 55,951, Jul. 9, 1979, Pat. No. 4,321,894. This application Jun. 27, 1983, Ser. No. 507,909

Int. Cl.³ F01L 1/24

U.S. Cl. 123—90.55 **11 Claims**



3. In combination, apparatus for the adjustment of the thermal expansion gap between a valve stem having a valve spring associated therewith and structure operating the valve stem within an internal combustion engine, comprising:

a valve spring retainer member having an open end, side walls, and a bottom wall having a valve stem receipt aperture defined therein, the aperture receiving the valve stem therein;

a cap member disposed within the open end of the valve spring retainer member and acting to close said open end of the valve spring retainer member;

a plunger member disposed adjacent the cap member and internally of the body member and being moved inwardly on depression of the cap member by the operating structure; and,

a seal member disposed adjacent the plunger member and defining a hydraulic fluid pressure chamber therebetween, the hydraulic fluid pressure chamber communicating with the valve stem receipt aperture, the hydraulic fluid pressure chamber having hydraulic fluid held therein which is compressed on inward movement of the plunger member

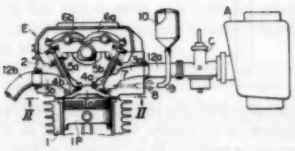
to transfer movement of the cap member through the plunger member to the valve spring retainer member and through the valve spring retainer member to the valve stem.

4,483,282

INTAKE SYSTEM OF AN INTERNAL COMBUSTION ENGINE

Hiromu Sakaoka, Asaka, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 176,542, Aug. 7, 1980, Pat. No. 4,408,576. This application Apr. 18, 1983, Ser. No. 485,911
Claims priority, application Japan, Aug. 10, 1979, 54-101258
Int. Cl.³ F02B *31/00*
U.S. Cl. 123—52 MB **4 Claims**



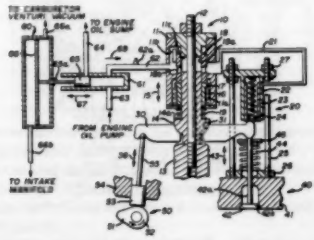
1. In an intake system for an internal combustion engine of a type having a cylinder head, a combustion chamber, an intake passage having a lower side, an exhaust passage, and an intake valve and an exhaust valve disposed in said intake and exhaust passages to open and close the respective passages, the improvement comprising a closed supply chamber of a predetermined volume disposed at a location in a plane above said intake passage, and control passage means having only two ends and being connected at one end of said ends to said supply chamber while being open at the other end to the lower side of said intake passage at a position upstream of and adjacent said intake valve, said control passage means having a portion extending from said other end to an open end and being disposed in a plane below said intake passage and integrally formed by said cylinder head, said control passage means further having a flexible conduit having two ends and being connected at one end of its ends to the open end of said portion and the other of its ends forming said one end of said control passage means.

4,483,283

VARIABLE VALVE CONTROL SYSTEM WITH DAMPENER ASSEMBLY

Louis A. Hausknecht, 4504 State Rd., Cleveland, Ohio 44109

Filed May 13, 1983, Ser. No. 494,532
Int. Cl.³ F01L *1/24*
U.S. Cl. 123—90.46 **9 Claims**



1. Means for controlling the operational event of values in internal combustion engines which are activated by the conversion of the rotary motion of a cam shaft into linear motion of a cam follower, comprising:

(A) a housing having a central blind bore opening into one face thereof;

(B) a variable hydraulic system;

(C) said hydraulic system being connected to said central bore;

(D) a cylindrical sleeve slidably received within said central bore and having a radial aperture variably positionable within said bore

(1) whereby fluid from said hydraulic system may be introduced into said housing to control the axial position of said sleeve;

(E) a rocker arm interconnecting the cam shaft and the valves;

(F) a control member

(1) engaging said rocker arm and

(2) slidably received within said sleeve and

(3) movable in response to linear movement of the cam follower and rocker arm to close off said radial aperture and trap the fluid in said blind bore

(a) whereby further linear movement of said rocker arm is prevented and pivotal movement is permitted;

(G) means for relieving fluid pressure in said hydraulic system;

(H) a dampener assembly freely disposed on the valve housing for limited movement relative thereto

(1) in fluid communication with said variable hydraulic system and

(2) in operative association with the valves;

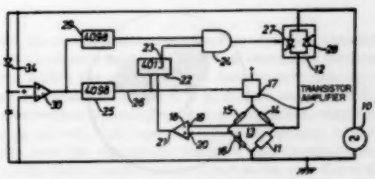
(I) said dampener assembly being operative, in response to fluid pressure, to retard closing movement of the valves whereby the valve dampener assembly is self-compensating for changes in oil viscosity.

4,483,284

IGNITION SYSTEM FOR CONTROLLING CURRENT FLOW TO A GLOW PLUG

Jan Y. N. Andreasson, Huskvarna, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

PCT No. PCT/SE81/00393, § 371 Date Sep. 24, 1982, § 102(e) Date Sep. 24, 1982, PCT Pub. No. WO82/02744, PCT Pub. Date Aug. 19, 1982
PCT Filed Dec. 29, 1981, Ser. No. 432,912
Claims priority, application Sweden, Jan. 30, 1981, 8100749
Int. Cl.³ F02N *17/00*
U.S. Cl. 123—179 H **7 Claims**



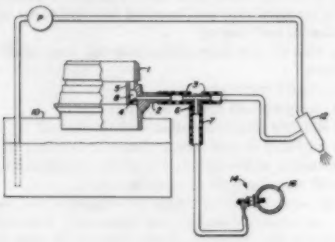
1. In an internal combustion engine ignition system having a glow plug and means applying a heating current to said glow plug, said glow plug being connected in one branch of a Wheatstone bridge, the improvement wherein the means applying current comprises switch means, said system further comprising sensing means including comparator means connected to the bridge and having a first output level responsive to a predetermined resistance of said glow plug corresponding to a cold condition of the glow plug, a source of test pulses connected to said bridge, and means responsive to the simultaneous occurrence of said first output and one of said test pulses for controlling said switch means to apply current to said glow plug.

4,483,285

DIESEL ENGINE COLD STARTING ARRANGEMENT

Hans Donnerstag, and Werner Donnerstag, both of Gross-Rohrheim, Fed. Rep. of Germany, assignors to Deere & Company, Moline, Ill.

Filed Mar. 1, 1983, Ser. No. 471,087
Claims priority, application Eurpoean Pat. Off., Mar. 8, 1982, 82301178.8
Int. Cl.³ F02N 17/02
U.S. Cl. 123—179 H 2 Claims



1. In a diesel engine cold starting system having a fuel injector, a main fuel tank, a return line for returning fuel from the injector to the main tank via a return inlet, a reservoir for storing a quantity of cold start fuel, burning means for burning fuel in an intake manifold of the engine and a branch line for communicating fuel from the reservoir to the burning means, the improvement wherein:

the reservoir is formed by a wall which forms a dam around the return inlet so that a quantity of fuel for cold starting trapped by the dam flows to the burning means via a portion of the return line and via the branch line.

4,483,286

PISTON

Rüdiger Herrmann, Aichwald; Detlef Schlosser, Kirchheim, and Heinz Wimmer, Leonberg, all of Fed. Rep. of Germany, assignors to Mahle GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 7, 1982, Ser. No. 366,152
Claims priority, application Fed. Rep. of Germany, Apr. 8, 1981, 3114124
Int. Cl.³ F02B 75/08; B23P 15/10
U.S. Cl. 123—193 P 7 Claims

1. A method of making a piston for reciprocation within a cylinder of an internal combustion engine in which the fuel entering the cylinder is directly injected onto a top surface of the piston, comprising:

(a) forming a piston body from an aluminum base alloy containing a silicon eutectic having a mean linear grain diameter of more than 3 μm;

(b) forming on at least one discrete region of the top surface of the piston body a grain refinement with an upper surface so that the silicon eutectic in that region has a mean linear diameter less than 3 μm; and

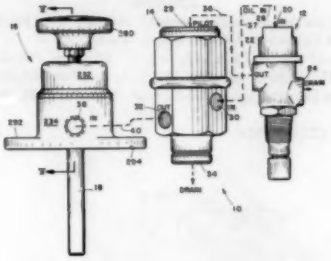
(c) forming a hard oxide layer by oxidization of the upper surface of at least the grain refined region.

4,483,287

MECHANICAL ENGINE PROTECTION SYSTEM

Larry E. Monigold, and Ordale Lewis, both of Cadillac, Mich., assignors to Kysor Industrial Corporation, Cadillac, Mich.

Filed May 10, 1982, Ser. No. 376,688
Int. Cl.³ F02B 77/08
U.S. Cl. 123—198 DB 64 Claims



1. A mechanical engine protection system connectable to the lubricating system of an engine which serves as a source of fluid and operable in response to an increase in engine temperature above a predetermined level, said system comprising:

a temperature responsive valve means defining an inlet port adapted to be connected to said lubricating system, an outlet port, and a drain port, for generating a control pressure signal at said outlet port, which signal varies as a function of engine temperature, said valve means including a valve member having a valve portion, a closed bore and a transfer port for selectively interconnecting said outlet port with said inlet port of said drain port; and

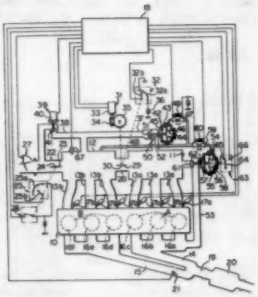
an expansible chamber means having an actuator port operatively connected to said outlet port for shifting an actuator member from a first position to a second position in response to said control pressure signal, said actuator member extending through said chamber means to permit manual actuation.

4,483,288

SPLIT ENGINE

Makoto Ueno, Shizuoka, and Kohei Hori, Susono, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Mar. 15, 1983, Ser. No. 475,484
Claims priority, application Japan, Oct. 18, 1982, 57-181465
Int. Cl.³ F02D 17/02
U.S. Cl. 123—198 F 17 Claims



1. A split engine having a plurality of cylinders which are divided into a first cylinder group and a second cylinder group, said engine comprising:

a first intake passage having an inlet and an outlet connected to said first cylinder group;

a second intake passage having an inlet and an outlet connected to said second cylinder group, the inlet of said first intake passage being connected to said second intake passage and the inlet of said second intake passage being open to the outside air;

an exhaust passage connected to said first cylinder group;

a manually operated throttle valve arranged in the inlet of said second intake passage;

detecting means for detecting the level of the load of the engine and for producing an output signal;

electronic control means for producing control signals in response to the output signal of said detecting means;

fuel supply means, actuated in response to a control signal of said electronic control means, for feeding fuel into only said second cylinder group when the level of the load of the engine is lower than a predetermined level and for feeding fuel into both of said cylinder groups when the level of the load of the engine is higher than the predetermined level;

an exhaust-gas recirculation passage interconnecting said exhaust passage to said first intake passage;

a recirculation control valve, arranged in said exhaust-gas recirculation passage, for controlling the flow area of said exhaust-gas recirculation passage;

actuating means operated in response to a control signal of said electronic control means and opening said recirculation control valve when the level of the load of the engine is lower than the predetermined level;

a shut-off valve, arranged in the inlet of said first intake passage, for controlling the flow area of the inlet of said first intake passage; and

a drive apparatus operated in response to a control signal of said electronic control means and having therein a DC motor which actuates said shut-off valve for opening it when the level of the load of the engine becomes higher than the predetermined level.

4,483,289

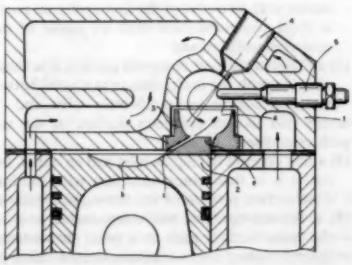
SYNTHESIS PROCEDURE AND COMBUSTION CHAMBER WITH VARIABLE TURBULENCE

Marius A. Paul, Alcea Baraj Cucuteni nr. 10, and Eugen Sarateanu, Calea Grivitei 397, both of Bucharest, Romania

Filed Dec. 29, 1981, Ser. No. 336,374

Int. Cl.³ F02F *3/24;* **F02B** *23/00, 19/04*

U.S. Cl. 123—263 **5 Claims**



1. A combustion structure for an internal combustion engine having a cylinder formed with an end wall and a piston displaceable in said cylinder toward and away from said end wall, said combustion structure comprising:

a piston cavity concave toward said end wall and formed on said piston;

a projection on said piston laterally offset from said cavity and having a plurality of surfaces of respective inclinations while being concave in the direction of said end wall;

a cavity formed in said end wall, aligned with said projection and opening toward said piston, said cavity in said end wall and the concavity of said projection defining during an injection, ignition and combustion phase of a cycle of said piston and said cylinder, a combustion compartment so shaped that said surfaces of said projection induce at least three distinct swirls of fluid in said chamber to collectively generate a three-dimensional circulation over the entire chamber;

at least one fuel injector opening into said cavity in said end wall for introducing fuel into said circulation for mixture with said fluid;

ignition means in said chamber for igniting the mixture of fuel and fluid formed in said circulation; and wherein said projection includes three angularly adjoining surfaces, two of said surfaces being mirrorsymmetrical with respect to one another and the other of said surfaces lying substantially at right angles to the mirrorsymmetrical surfaces, said mirrorsymmetrical surfaces being inclinded to the direction of displacement of said piston at one angle and the other surface being inclined to the direction of displacement at another angle.

4,483,290

COMPRESSION-IGNITION INTERNAL COMBUSTION ENGINE

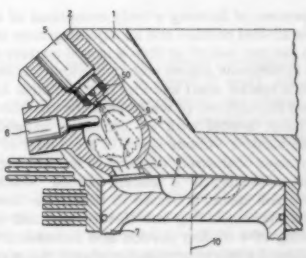
Eckhard Hass, Cologne, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz AG, Cologne, Fed. Rep. of Germany

Continuation of Ser. No. 130,240, Mar. 14, 1980, abandoned. This application Mar. 29, 1982, Ser. No. 363,270

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1979, 2912155

Int. Cl.³ F02B *19/16*

U.S. Cl. 123—284 **1 Claim**



1. An air-compression, auto-ignition cylinder combustion engine with an approximately spherical secondary combustion chamber within the cylinder head, having only one injection channel by means of which it is in communication with one main combustion chamber within the cylinder, while being otherwise closed, said injection channel opening essentially centrally into the secondary chamber and opening into the main combustion chamber in the outer radial area thereof, and having an injection nozzle arranged essentially diametrically opposite to the opening of the injection channel into the secondary combustion chamber, the improvement wherein the injection nozzle is designed as double-jet nozzle, the axes of the two holes thereof being arranged parallel to each other in such a manner that they pass the center of the secondary combustion chamber at a distance of 0.1 times the diameter of said secondary combustion chamber, and the two axes of the holes of the injection nozzle meet the wall of the secondary combustion chamber at a distance of about 0.1 times the diameter of the secondary combustion chamber from the opening of the injection channel, the point of impact being located closer to the longitudinal axis of the piston than the opening of the injection channel in the secondary chamber the area of the cross-section of the injection channel being about 1% of the

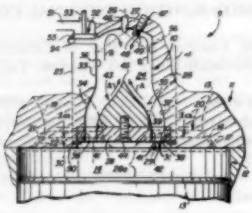
total piston surface, the volume of the secondary combustion chamber being approximately between 25% and 35% of the total compression volume, and the length of the injection channel being smaller than its diameter, being designed on a scale of about 2:3, whereby the development of any strong rotary currents in said secondary chamber are substantially avoided, and whereby high turbulence currents are developed in said secondary chamber which substantially prevent the injected fuel from precipitating as a coating on the wall of said secondary chamber and which permit the formation of a fuel-air mixture adjacent said wall to thereby effect a reduction in hydrocarbons, oxides of nitrogen and other impurities contained in the exhaust from the engine.

4,483,291

PROCESS OF SEGREGATING AIR-FUEL MASS IN ENGINE AUXILIARY CHAMBER

Noel G. Artman, 15830 Nicklaus La., Sun City, Ariz. 85351

Division of Ser. No. 366,446, Apr. 7, 1982, Pat. No. 4,446,831.
This application Jan. 24, 1983, Ser. No. 460,710
Int. Cl.³ F02B *3/00, 23/00*
U.S. Cl. 123—286 **5 Claims**



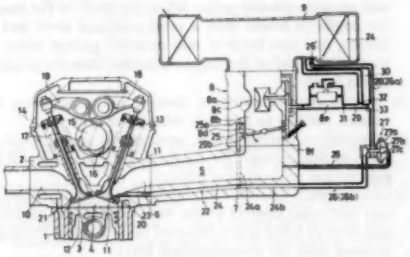
1. The process of forming a body comprised of a mass of combustible air-fuel mixture and an adjoining mass of air containing less fuel per unit of air than is in said mixture all within an internal combustion engine precombustion chamber having opposite ends spaced apart endwise of a principal axis of the chamber and through one of which ends the chamber communicates endwise thereof with an alternately expandable and contractable variable volume space in a cylinder of such engine, said process comprising the steps of introducing into said chamber air consisting of a leading portion which, during expansion of said space, is caused to flow from the chamber through the communicating end thereof into said space and also consisting of a trailing portion also introduced into said chamber where it exists at termination of such space expansion, introducing fuel into the chamber in such quantity and timed relation with the expansion and ensuing contraction of said space as to coexist in mixed relation with the trailing portion of the introduced air to form therewith sidd air-fuel mixture, then, during such ensuing contraction of said space, directing the flow of air from said space and into the chamber through the communicating end thereof while guiding at least a portion of such directed air internally of the chamber in the form of a tubular column extending lengthwise of and encircling said axis and internally transversely spaced from said axis adjacently to the one end of the chamber and internally axially tapered to advance convergingly toward said axis at a position thereon nearer to the other end of the chamber to compress the air-fuel mixture into a concentrated mass adjacently to the other end of the chamber attendant to establishing said column as at least a part of said adjoining air mass within the chamber, the process also including, within a period occurring during said space expansion and prior to the trailing air portion starting entry into the chamber, the step of introducing a supplement of fuel into the chamber to coexist and mix therein with a part of the leading air portion, thus causing the leading air portion to convey such fuel therewith into said space and subsequently return at least a part of such fuel therewith from the space into the chamber during the ensuing contraction of said space to provide the chambr with fuel supplementing that in the compressed air-fuel mixture, and the further step of varying the quantity of fuel introduced during said period to selectively determine power output of said engine.

4,483,292

INTERNAL COMBUSTION ENGINE

Yuzuru Namba, and Kenichi Aoyagi, both of Hamamatsu, Japan, assignors to Suzuki Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Sep. 17, 1981, Ser. No. 303,125
Claims priority, application Japan, Sep. 29, 1980, 55-135603
Int. Cl.³ F02M *35/10*
U.S. Cl. 123—308 **1 Claim**



1. An internal combustion engine comprising:

A. a combustion chamber having a suction valve and a piston operable to make a suction stroke in the combustion chamber; and

B. a fuel supply device having a draft passage comprising an air metering portion and a throttle valve downstream of the air metering portion; and

C. a main suction path connecting the fuel supply device with the combustion chamber; and

D. a sub-suction path separate from the main suction path; said sub-suction path comprising a downstream portion and a first upstream portion and a second upstream portion; wherein

(1) an outlet of the downstream portion constitutes means for creating a swirl of gases in the combustion chamber; and

(2) an inlet of the downstream portion is in fluid communication with an outlet of the first upstream portion and is in fluid communication with an outlet of the second upstream portion; and

(3) an inlet of the first upstream portion is in fluid communication with the draft passage at a point between its air metering portion and its throttle valve; and

wherein said second upstream portion of the sub-suction path comprises:

(4) a first conduit having an inlet and an outlet, wherein its outlet is in fluid communication with the inlet of the downstream portion of the sub-suction path; and

(5) a vacuum-operated valve responsive to a vacuum in the main suction path at a point downstream of the throttle valve; said vacuum-operated valve having an inlet and an outlet wherein its outlet is in fluid communication with the inlet of the first conduit; and

(6) a second conduit having an inlet and outlet wherein its outlet is in fluid communication with the inlet of the vacuum-operated valve; and

(7) a third conduit having an inlet and an outlet wherein its outlet is in fluid communication with the inlet of the second conduit; and wherein its inlet is in fluid communication with an air cleaner; and

(8) a fourth conduit having an inlet and an outlet and a flow-restricting jet within the fourth conduit between

the inlet and the outlet wherein its outlet is in fluid communication with the inlet of the second conduit; and

(9) a fifth conduit having an inlet and an outlet and having a flow-restricting jet between its inlet and its outlet; wherein its outlet is in fluid communication with the inlet of the fourth conduit; and

(10) a sixth conduit having an inlet and an outlet and having a flow-restricting jet within the sixth conduit between the inlet and the outlet wherein its outlet is in fluid communication with the inlet of the fourth conduit; and

(11) a float chamber containing fuel wherein the float chamber is in fluid communication with the inlet of the sixth conduit

whereby when the vacuum-operated valve senses sub-atmospheric pressure at a point in the main suction path downstream of the throttle valve that this sub-atmospheric pressure causes opening of the vacuum-operated valve causing fuel to flow from the float chamber through the sixth conduit to the inlet of the fourth conduit whereupon fuel in the sixth conduit is mixed with air from the fifth conduit whereby producing a fuel-air mixture which enters the inlet of the second conduit at which point it is mixed with additional air from the third conduit which fuel-air mixture then passes through the vacuum-operated valve and through the first conduit into the inlet of the downstream portion of the sub-suction path where it is mixed with a different fuel-air mixture from the second upstream portion of the sub-suction path wherein said combined fuel-air mixture passes through the outlet of the downstream portion and causes a swirl of gases in the combustion chamber.

4,483,293

IGNITION TIME CONTROL DEVICE

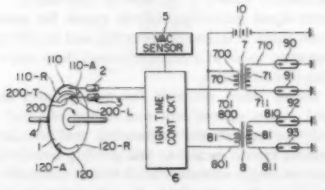
Masahira Akasu, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 4, 1983, Ser. No. 481,941

Claims priority, application Japan, Apr. 6, 1982, 57-58689; Jun. 14, 1982, 57-103647

Int. Cl.³ F02P 5/00

U.S. Cl. 123—414 **9 Claims**



1. An ignition time control device for a multicylinder internal combustion engine comprising angle sensor means providing an output which is initiated at an angle advanced from the maximum ignition advance angle of each engine cylinder and terminated at a start time ignition angle thereof; at least one cylinder sensor operatively associated with each engine cylinder and delivering an output at each ignition, said cylinder sensor output being initiated at an angle advanced from the angle sensor output and terminated at an angle retarded from a start time ignition angle; at least one sensor arranged for sensing the operating state of the engine; and an ignition timing control circuit operable to receive the outputs from said angle sensor means and said cylinder sensor for supplying and interrupting the current to ignition coil means at a suitable timing.

4,483,294

ENGINE CONTROL SYSTEM

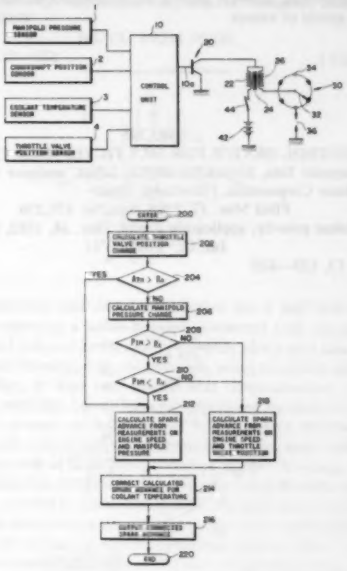
Kunifumi Sawamoto, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 24, 1982, Ser. No. 351,900

Claims priority, application Japan, Mar. 5, 1981, 56-31512

Int. Cl.³ F02P 5/10

U.S. Cl. 123—417 **10 Claims**


MANIFOLD PRESSURE SENSOR
CRANKSHAFT POSITION SENSOR
COOLANT TEMPERATURE SENSOR
THROTTLE VALVE POSITION SENSOR
CONTROL UNIT
START
CALCULATE THROTTLE VALVE POSITION CHANGE
CALCULATE MANIFOLD PRESSURE CHANGE
YES
NO
CALCULATE SPARK ADVANCE FROM MEASUREMENTS OF ENGINE SPEED AND MANIFOLD PRESSURE
CALCULATE SPARK ADVANCE FROM MEASUREMENTS OF ENGINE SPEED AND THROTTLE VALVE POSITION
CORRECT CALCULATED SPARK ADVANCE FOR COOLANT TEMPERATURE
OUTPUT CORRECTED SPARK ADVANCE
END

1. A system for use with an internal combustion engine for controlling ignition timing in terms of spark advance in response to engine operating parameters, comprising:

(a) means for measuring values of engine operating parameters including intake-manifold vacuum pressure, throttle-valve angular position, and engine speed;

(b) means for controlling said spark advance;

(c) a digital computer selectively employing a first group of measured values of intake-manifold vacuum pressure and engine speed or a second group of measured values of throttle-valve angular position and engine speed for calculating a value corresponding to a setting of said controlling means, said digital computer being operable to calculate a difference between sequential measurements made at uniform time intervals of the intake-manifold vacuum pressure and to determine if said calculated difference is within a predetermined range, said digital computer being further operable to calculate a value corresponding to a setting of said controlling means from said first group of measured values when said calculated intake-manifold vacuum pressure difference is within said predetermined range and for calculating a value corresponding to said setting of said controlling means from said second group of measured values when said calculated intake-manifold vacuum pressure difference exceeds said predetermined range.

6. A method of controlling ignition timing for an internal combustion engine, comprising the steps of:

measuring a first group of values of intake-manifold pressure and engine speed at generally uniform time intervals;

measuring a second group of values of throttle position and engine speed at generally uniform time intervals;

calculating a difference between sequentially measured values of intake-manifold pressure;

determining whether said calculated intake-manifold pressure difference exceeds a predetermined range;

selecting said first group of values when said calculated intake-manifold pressure difference is within said predetermined range and selecting said second group of values when said calculated intake-manifold pressure difference exceeds said predetermined range; and

controlling ignition timing as a function of the selected group of values.

4,483,295

CONTROL DEVICE FOR MULTICYLINDER ENGINE

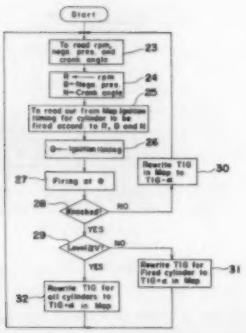
Katsuyoshi Iida, Higashihiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Filed Mar. 17, 1983, Ser. No. 476,276

Claims priority, application Japan, Mar. 24, 1982, 57-47894

Int. Cl.³ F02D 5/14

U.S. Cl. 123—425 **6 Claims**



1. A control device in combination with a multicylinder internal combustion engine having a plurality of engine cylinders adapted to be fired in a predetermined order, fuel combustion means in each cylinder and actuating means for actuating said fuel combustion means in said predetermined order, said control device comprising:

vibration sensing means operably connected to said engine for sensing engine vibration and generating a first signal in accordance therewith;

knock detecting circuit means connected to said vibration sensing means for receiving said first signal, and separating from said first signal any portion thereof which is generated by engine knock and generating a second signal in accordance therewith;

crank angle sensing means operably connected to said engine for sensing the crank angle of the engine and generating a third signal in accordance therewith; and

a control circuit operably connected to said actuating means and to said knock detecting circuit means and said crank angle sensing means and including first circuit means for comparing said second and third signals to identify an engine cylinder in which knocking has occurred, and for providing a fourth signal to said actuating means in response to said second signal, when said second signal is below a predetermined value, to retard the actuation of the respective fuel combustion means, and second circuit means for providing a signal to said actuating means, when said second signal is above said predetermined value, to retard the actuation of all of said fuel combustion means.

4,483,296

SYSTEM FOR CONTROLLING AN AIR-FUEL RATIO

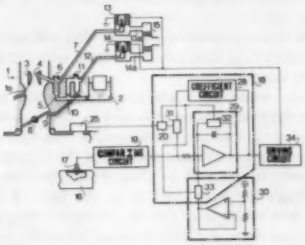
Ryuji Kataoka, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo and Nissan Motor Company, Limited, Yokohama, both of, Japan

Division of Ser. No. 174,372, Aug. 1, 1980, Pat. No. 4,393,839. This application Sep. 14, 1982, Ser. No. 417,969

Claims priority, application Japan, Aug. 2, 1979, 54-98919

Int. Cl.³ F02M 7/12

U.S. Cl. 123—440 **5 Claims**



1. In a system for controlling the air-fuel ratio for a carburetor of an internal combustion engine having an induction passage, a throttle valve in said induction passage, an exhaust passage, detecting means for detecting the concentration of a constituent of exhaust gases passing through said exhaust passage and providing a detecting output signal dependent thereon, air-fuel mixture supply means for supplying the air-fuel mixture to the induction passage, including an on-off type electromagnetic valve for correcting the air-fuel ratio of the air-fuel mixture supplied by said air-fuel mixture supply means, the improvement comprising

electronic control means comprising a comparing circuit means for comparing the detecting output signal of said detecting means with a reference value corresponding to a stoichiometric air-fuel ratio value and for producing a first output signal dependent on the difference,

a driving circuit means for producing a driving output for driving said on-off type electromagnetic valve dependent on the first output signal of said comparing circuit means for controlling the air-fuel ratio to a valve approximately equal to the stoichiometric air-fuel ratio when said electronic control means is operatively responsive,

a constant signal generating circuit means for producing a constant signal selectively operating said on-off type electromagnetic valve at a predetermined duty ratio via said driving circuit means,

switch means when actuated for making said electronic control means operatively non-responsive and simultaneously for operatively connecting said constant signal generating circuit means to said driving circuit means,

means comprising a vacuum switch in said induction passage for sensing only such a high vacuum occurring in a rapid deceleration condition of said engine that would cause misfiring and for simultaneously producing a second output signal for actuating said switch means whereby said driving circuit means is operated by the constant signal from said constant signal generating circuit means for driving said electromagnetic valve at said predetermined duty ratio,

said switch means includes,

a first switch having inputs operatively connected to said comparing circuit means and to an output of said vacuum switch,

a second switch having inputs operatively connected to outputs of said vacuum switch and said constant signal generating circuit means, and

said first and second switches each having an output con-

nected operatively to an input of said driving circuit means,

said system further comprising

an integration circuit connected between said comparing circuit and an input of said driving circuit means, and

a coefficient circuit connected in parallel to said integration circuit,

said switch means includes a third switch,

said integration circuit includes a capacitor connected across said first switch,

said third switch is connected between said comparing circuit and said coefficient circuit in series with the latter, and

said means comprising a vacuum switch includes a switch actuating circuit for closing said first and second switches and simultaneously opening said third switch when said vacuum switch detects said high vacuum occurring in said rapid deceleration condition, at other times said third switch being closed and said first and second switches being open.

4,483,297
FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

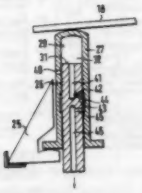
Franz Eheim, Stuttgart; Gerald Höfer, Weissach; Claus Köster, Ditzingen; Karl Konrath, Ludwigsburg, and Manfred Schwarz, Gerlingen, all of Fed. Rep. of Germany, assignors to Robert Bosch, Stuttgart, Fed. Rep. of Germany

Filed Aug. 23, 1982, Ser. No. 410,670

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1981, 3135477

Int. Cl.³ F02D *1/04;* **F02M** *59/24*

U.S. Cl. 123—449 **13 Claims**



1. A fuel injection pump for internal combustion engines having a fuel supply pump generating an rpm-dependent pressure in a suction chamber of the fuel injection pump and an rpm governor provided with a governor sleeve, said sleeve being displaceable on a piston having end and jacket faces by means of an rpm-dependent force counter to the force of a governor spring arrangement which further comprises a starting spring, further wherein said governor sleeve actuates a fuel quantity adjusting device in such a manner that with an increasingly long adjustment path of said governor sleeve the fuel quantity is reduced, said governor sleeve further arranged to enclose in its interior a pressure chamber defined by said end face of said piston and said pressure chamber being connectable with said pump suction chamber which surrounds said governor sleeve, characterized in that said pressure chamber, in said governor sleeve has an outset position and at said outset position said pressure chamber communicates via a relief line with a chamber of lower pressure, and further that said relief line is closable beyond a predetermined stroke of said governor sleeve by means of a control edge.

4,483,298
VALVE

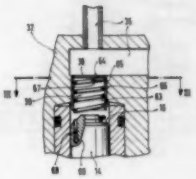
Rudolf Schütz, Ditzingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 200,649, Oct. 27, 1980, abandoned. This application Mar. 23, 1984, Ser. No. 592,738

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1979, 2950599

Int. Cl.³ F02M *39/00*

U.S. Cl. 123—452 **3 Claims**



1. A metering and distribution valve for a fuel injection system comprising a valve housing, a control slide having a longitudinal axis and being axially movable along said axis in a bore in said housing, said control slide being provided with a control edge, at least two control slits communicating with said bore, said slits being opened to said bore by said control edge to a greater or lesser extent upon relative movement between said control edge and said control slits, and a helical spring disposed in a pressure chamber in said housing, said pressure chamber communicating via a damping throttle opening with a control pressure line that carries a pressurized fluid, said helical spring being supported at one end on an end of said control slide having an axially extending opening that is disposed eccentrically of said control slide longitudinal axis, said helical spring one end having a first bent portion extending axially into said control slide opening, said pressure chamber containing a perforated damping sheath which is secured against twisting in said housing, said damping sheath having one side exposed to said control pressure line and an opposite side disposed to said pressure chamber, said helical spring having at its other end a second bent portion, means securing said second bent portion in a twist-free manner to said damping sheath, said spring permitting axial movement of said control slide while constraining the latter against turning movement about its longitudinal axis.

4,483,299
METHOD FOR DETECTING ABNORMALITY IN SENSOR MEANS FOR DETECTING A PARAMETER RELATING TO INTAKE AIR QUANTITY OF AN INTERNAL COMBUSTION ENGINE

Yutaka Otobe, Shiki, and Noriyuki Kishi, Itabashi, both of Japan, assignors to Honda Motor Co., Ltd., Tokyo, Japan

Filed Jul. 27, 1983, Ser. No. 517,791

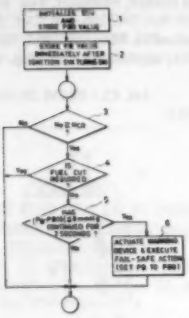
Claims priority, application Japan, Aug. 12, 1982, 57-140343

Int. Cl.³ F02D *5/00*

U.S. Cl. 123—479 **9 Claims**

1. A method for detecting an abnormality in parameter sensor means for detecting the value of a parameter relating to the quantity of intake air being supplied to an internal combustion engine having an ignition switch, for use in control of the operation of said engine, the method comprising the steps of: (1) storing an output value from said parameter sensor means generated immediately after closing of said ignition switch of said engine; (2) detecting the rotational speed of said engine; (3) comparing an output value from said parameter sensor means with said output value from said sensor means, stored in said step (1); and (4) regarding said parameter sensor means as abnormal when it is determined in said steps (2) and (3) that

said parameter sensor means continuously generates an output value substantially equal to said stored value for a predetermined period of time while simultaneously the rotational speed of said engine remains higher than a predetermined value.



4,483,300

FEEDBACK AIR FUEL RATIO CONTROL SYSTEM AND METHOD

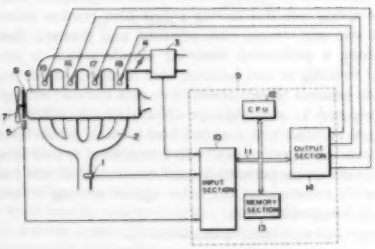
Akio Hosaka, Yokohama, and Hiroshi Yamaguchi, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jan. 18, 1982, Ser. No. 340,278

Claims priority, application Japan, Jan. 20, 1981, 56-005937

Int. Cl.³ F02M *51/00*

U.S. Cl. 123—489 **15 Claims**



1. An air fuel ratio feedback control method for a multi-cylinder engine comprising;

sensing exhaust gas composition at a confluence of exhaust streams from individual cylinders and producing a sensor signal indicative of the air fuel ratio,

producing a control signal in accordance with the sensor signal,

examining the fluctuation of the sensor signal within a limited time interval to detect the cylinder to cylinder distribution of the air fuel ratio, during said limited time interval the sensor signal remaining on either side of a target reference value whereas the sensor signal swings on both sides of the target reference value owing to a controlled oscillation of the control system,

modifying the control signal so as to reduce the sensor signal fluctuation to make the detected cylinder to cylinder air fuel distribution uniform,

supplying to each individual combustion chamber an air fuel mixture of an air fuel ratio controlled differently from others under the command of the modified control signal.

2. A feedback air fuel ratio control system for a multi-cylinder engine, the system comprising;

an air fuel ratio sensor for sensing exhaust gas composition at a confluence of exhaust streams from individual cylinders and producing a sensor signal indicative of air fuel ratio,

a control unit for producing a control signal in accordance with the sensor signal,

fuel supplying means for supplying, to the individual cylinders, an air fuel mixture of a controlled air fuel ratio under the command of the control signal,

said control unit comprising means for examining the fluctuation of the sensor signal to detect the cylinder to cylinder distribution of the air fuel ratio, and means for modifying the control signal so as to make the detected cylinder to cylinder air fuel ratio distribution uniform, said fuel supplying, means being capable of providing each cylinder with a mixture of an air fuel ratio controlled differently from others under the command of the modified control signal, said examining means being arranged to detect the sensor signal fluctuation within a limited time interval during which the sensor signal remains on either side of a target reference value whereas the sensor signal swings on both sides of the target reference value owing to a controlled oscillation of the control system, said modifying means modifying the control signal so as to reduce the sensor signal fluctuation.

4,483,301

METHOD AND APPARATUS FOR CONTROLLING FUEL INJECTION IN ACCORDANCE WITH CALCULATED BASIC AMOUNT

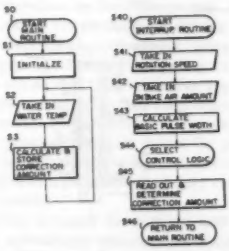
Yasuo Yamada, Oogaki; Shiro Nagasawa, Kariya; Takao Niwa, and Takeshi Gouno, both of Susono, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Sep. 1, 1982, Ser. No. 413,900

Claims priority, application Japan, Sep. 3, 1981, 56-137790; Sep. 18, 1981, 56-147308

Int. Cl.³ F02M *51/00*

U.S. Cl. 123—489 **12 Claims**



1. A method for controlling electronically the fuel injection in an internal combustion engine comprising the steps of:

obtaining operation values of a plurality of parameters representing engine running condition;

calculating a basic width of a pulse for fuel injection on the basis of said obtained operation values;

preliminarily dividing engine load range into at least a first load range indicative of a light load range and a second load range;

preliminarily associating a first fuel range of values of said basic width with said first load range and a second fuel range of values of said basic width with said second load range;

calculating an amount of decrease of fuel injection according to said basic width when said basic width is in said first fuel range; and

carrying out decremental correction of said basic width using said calculated amount of decrease of fuel injection to lean the air-fuel mixture under light load conditions.

7. Apparatus for controlling electronically the fuel injection in an internal combustion engine comprising:

means for sensing parameters representing engine running condition and generating operational values related thereto;

processing means for: (1) determining a basic width of a pulse for fuel injection on the basis of said operational values, and (2) decreasing said basic width when said basic width is in a predetermined fuel injection range related to a predetermined load range to lean the air-fuel mixture under light load conditions; and

means, coupled to said processing means, for controlling fuel injection in response to the determination of said processing means.

4,483,302

COMBUSTION ENGINE COMPRISING A VAPORIZER PRESSURE REGULATOR

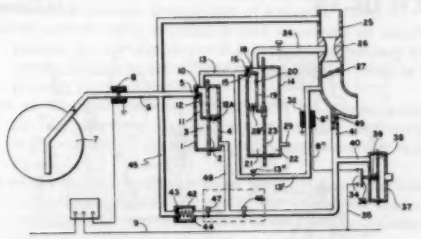
Johannes Mannessen, Prof. Lorentzlaan 193, 3707 HH Zeist, Netherlands

Filed Jan. 24, 1983, Ser. No. 460,437

Claims priority, application European Pat. Off., Sep. 29, 1982, 82201214.2

Int. Cl.³ F02B *43/00*; F02M *21/04*

U.S. Cl. 123—527 **47 Claims**



1. A vaporizer-pressure regulator apparatus for a combustion engine with an electrical ignition circuit comprising an inlet duct having a venturi and a control-valve mounted therein downstream of the venturi, the vaporizer-pressure regulator comprising a first housing with a first space, a first diaphragm for dividing the first space into a first part and a second part, a fuel supply duct opening into the first part to define a fuel supply orifice, a first shut-off valve in the first part, the first diaphragm being provided for actuating the first shut-off valve to variably open the fuel supply orifice, a fuel duct network coupling the first part of the first space to the inlet duct, a fuel flow affecting member for effecting the fuel flow in the fuel duct network comprising a second housing defining a second space, the second space communicating with the inlet duct, a pressure duct network connecting the second part of the first space to the inlet duct both downstream and upstream of the control valve in the inlet duct, the pressure duct network comprising a passageway region with a sized opening therethrough, and opening control means for varying the size of opening through the passageway region of the pressure duct network in dependence on the load of the combustion engine occurring during operation.

4,483,303

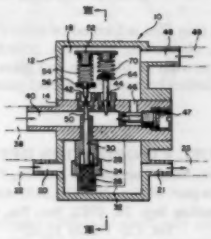
APPARATUS FOR REGULATING FUEL SUPPLY TO LIQUEFIED PETROLEUM GAS ENGINE

Norikazu Ishikawa, Zama, and Masanori Fujisaki, Tokyo, both of Japan, assignors to Nippon Carbureter Co., Ltd., Tokyo, Japan

Filed Mar. 2, 1983, Ser. No. 471,249

Int. Cl.³ F02B *43/00*

U.S. Cl. 123—527 **10 Claims**



1. In an apparatus for regulating the fuel supply to a liquefied petroleum gas engine, which apparatus is to be disposed in a fuel supply system including a supply of the liquefied petroleum gas fuel in liquid phase, a vaporizer for converting the fuel in liquid phase into the fuel in gas phase and regulating its pressure, and a carburetor for mixing the fuel in gas phase with air and supplying the mixture to the engine, the improvement comprising:

(A) a first valve means for regulating the flow of the fuel supplied from said vaporizer to said carburetor in response to the temperature of the fuel in liquid phase being fed from said fuel supply to said vaporizer; and

(B) a second valve means for regulating the flow of the fuel supplied from said vaporizer to said carburetor in response to the vapor pressure of the fuel in liquid phase being fed from said fuel supply to said vaporizer.

4,483,304

FUEL VAPORIZER FOR INTERNAL COMBUSTION ENGINES

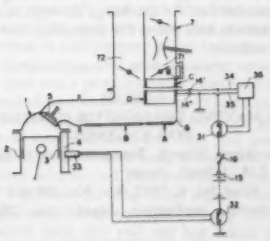
Yutaka Yokoi, and Kenji Fujikake, both of Nagoya, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed Jan. 20, 1982, Ser. No. 341,145

Claims priority, application Japan, Jan. 26, 1981, 56-9887

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—549 **7 Claims**



1. A fuel vaporizer for an internal combustion engine having an intake passage extending through a carburetor and an intake manifold, in which a slow jet nozzle is opened, said fuel vaporizer comprising:

a heating cylinder adapted to be mounted downstream of the slow jet nozzle in concentric relation to the intake pas-

sage, wherein said heating cylinder further comprises a cylindrical base body of electrically and thermally insulative ceramics and a coating on an inner peripheral surface thereof of a thin film of electrically resistive material for being heated when an electric current flows therethrough, said thin film being substantially flush with an inner wall of the intake passage, and

a power supply connected to said thin film, whereby said thin film when heated evaporates fuel in liquid phase flowing down the intake passage and contacting said thin film

wherein said thin film is formed of one of a group comprising nickel, chromium, platinum, powder of carbon and glass, and powder of tungsten and glass and wherein said thin film further comprises a nickel plated film.

4,483,305

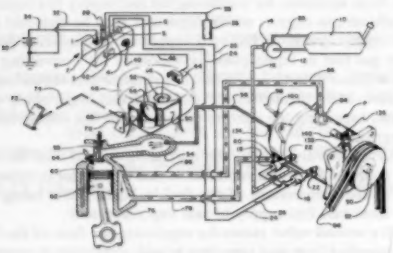
FUEL VAPORIZATION DEVICE

James E. Gilmor, 5524 Tucson St., Denver, Colo. 80239

Continuation-in-part of Ser. No. 404,518, Aug. 2, 1982,. This application Sep. 24, 1982, Ser. No. 423,437

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—557 **8 Claims**



1. A device for converting liquid hydrocarbon fuel supplied from a supply tank to a substantially gaseous fuel which is furnished to the intake manifold of an internal combustion engine, said device comprising:

a vacuum pump having a vacuum chamber with a single inlet and a single outlet;

a fuel injector connected to said inlet for injecting atomized liquid fuel droplets into said vacuum chamber in timed sequence;

means for drawing a vacuum in said vacuum chamber in timed sequence with the injection of liquid fuel droplets to provide a vacuum in said chamber at the time of injection to immediately vaporize substantially all of the liquid fuel droplets to form a gaseous fuel for increasing the pressure of the gaseous fuel for discharge through said outlet; and

heating means in said pump for providing heat to said vacuum chamber.

4,483,306

MAGNETO HAVING TRANSISTOR IGNITION CIRCUIT FOR ENGINES

Junichi Kawashima, Himeji, Japan, assignor to Ikeda Electric Mfg. Co., Ltd., Himeji, Japan

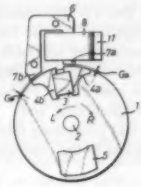
Filed Jul. 6, 1982, Ser. No. 395,664

Claims priority, application Japan, Jul. 20, 1981, 56-108093[U]

Int. Cl.³ F02P *1/00*

U.S. Cl. 123—631 **2 Claims**

1. In a magneto and transistor ignition circuit for engines which comprises a rotor provided with a magnet having a pair of poles, and a stationary assembly including a U-shaped iron core having first and second legs forming a magnetic path, an ignition coil having primary and secondary windings wound around said first leg and a transistor connected to said primary winding and so arranged that current induced in said primary winding when the rotor is rotated is interrupted by turning off of the transistor to induce a high voltage in said secondary winding, the improvement to prevent ignition during reverse



rotation comprising a gap portion formed in said magnetic path of said second leg to substantially reduce the area of the magnetic path and thereby cause increased magnetic resistance in said magnetic path.

4,483,307

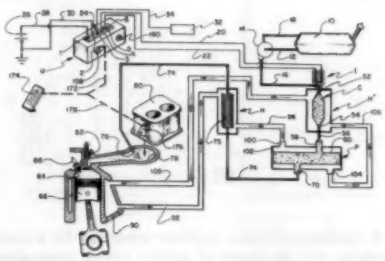
FUEL VAPORIZATION DEVICE FOR INTERNAL COMBUSTION ENGINE

James E. Gilmor, 5524 Tucson St., Denver, Colo. 80239

Filed Aug. 2, 1982, Ser. No. 404,518

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—558 **10 Claims**



1. A device for converting liquid hydrocarbon fuel to gaseous hydrocarbon fuel without distillation, said device comprising:

a vacuum chamber closed to the atmosphere and having a single inlet and a single outlet;

means for drawing a vacuum in said vacuum chamber through said outlet;

means for injecting atomized liquid fuel without air into said chamber so that substantially all the injected fuel is immediately converted from a liquid state to a gaseous air-free state wherein said gaseous fuel is drawn by said vacuum means through said outlet; and

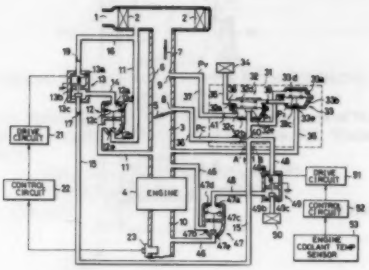
a heat exchanger device having means for bringing hot fluid from an internal combustion engine into heat exchange relationship with the gaseous fuel in said vacuum drawing means and means for maintaining the gaseous fluid at a substantially constant temperature and in the gaseous state from said vacuum chamber to the intake manifold of said engine.

4,483,308

AIR INTAKE SIDE SECONDARY AIR SUPPLY SYSTEM FOR AN INTERNAL COMBUSTION ENGINE EQUIPPED WITH EXHAUST GAS RECIRCULATION CONTROL SYSTEM

Shumpei Hasegawa, Niiza, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 12, 1984, Ser. No. 599,300
Claims priority, application Japan, Apr. 19, 1983, 58-068929
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—571 **4 Claims**



1. An air intake side secondary air supply system for an internal combustion engine equipped with an exhaust gas recirculation system including an EGR passage connecting an exhaust gas passage and an intake air passage of the engine and a EGR flow control valve disposed in the EGR passage for varying sectional area of the EGR passage in accordance with a pressure level in a pressure chamber there of, comprising:

an air intake side secondary air supply passage leading to the intake air passage, downstream of a throttle valve;

an air control valve disposed in said secondary air supply passage for varying sectional area of the secondary air supply passage in accordance with a pressure level in a pressure chamber thererof;

an air/fuel ratio determination means for determinating air/fuel ratio from composition of an exhaust gas flowing in the exhaust gas passage and producing an air/fuel ratio signal;

a source of a first control pressure for supplying a first control pressure capable of opening the EGR flow control valve into said pressure chamber of the EGR flow control valve via a first pressure supply passage; and

a pressure supply means for making communication between said first pressure passage and the pressure chamber of the air control valve in accordance with said air/fuel ratio signal and gradually varying pressure level in the pressure chamber of the air control valve.

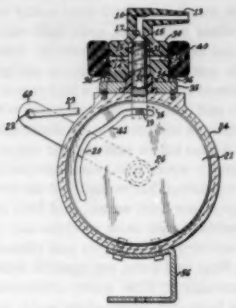
4,483,309

FUEL-AIR CONTROL DEVICE

Juanita Norman, and Dan M. Norman, both of 2132 E. 4850 S., Salt Lake City, Utah 84117

Filed May 18, 1983, Ser. No. 495,737
Int. Cl.³ F02M *25/06, 23/04*
U.S. Cl. 123—574 **17 Claims**

1. A device for aiding in the control of the fuel-air mixture in an internal combustion engine having an accelerator linked mechanically to a carburetor and a ventilation passage from the crankcase of said engine to the intake manifold, a valve housing having a seat coupled to an air passage, said air passage adapted for communication between the ambient air and said ventilation passage; and a valve means for seating in said seat to prevent ambient air from flowing into said air passage; wherein the improvement comprises a rotatable valve control cam means mechanically coupled to the accelerator linkage to gradually open said valve means to admit more and more ambient air into said air passage as the engine speed is increased



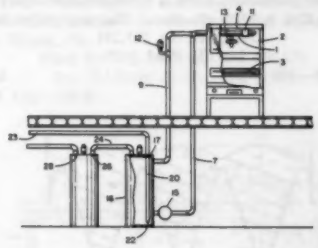
and at still higher engine speeds to gradually close said valve means to admit less and less ambient air into said air passage.

4,483,310

HEAT EXCHANGER

James Kelly, Rte. 45 and Nebraska St., Frankfort, Ill. 60423

Filed Jul. 6, 1982, Ser. No. 395,374
Int. Cl.³ F24C *13/00*
U.S. Cl. 126—35 **4 Claims**



1. A heat exhanger comprising a coil assembly, an oven for heating food, said coil assembly being mounted in said oven, an intermediate water tank, said intermediate water tank including a first outlet port and a first inlet port, a first outlet conduit connected between said first outlet port of said intermediate water tank and said coil assembly, a return conduit connected between said coil assembly and said first inlet port of said intermediate water tank, a primary water tank, primary heating means to heat water in said primary water tank to a pre-determined end use temperature, said primary water tank including a primary inlet port and a primary outlet port, said intermediate water tank including a second outlet port and a second inlet port, a second outlet conduit connected between said second outlet port of said intermediate water tank and said primary inlet port of said primary water tank, a cold water conduit connected between said second inlet port of said intermediate water tank and a pressurized cold water supply source, a hot water conduit connected between said primary outlet port of said primary water tank and end use hot water dispensing means, a pump to circulate water from said first outlet port of said intermediate tank through said coil assembly and back to said intermediate water tank through said first inlet port thereof, pressure within said primary and intermediate water tanks being in equilibrium when each is filled, pressure within said intermediate water tank when filled being in equilibrium with said pressurized cold water supply source, whereby when a quantity of hot water at said end use temperature is drawn

from said primary water tank substantially the same quantity of water automatically flows from said intermediate water tank to said primary water tank and substantially the same quantity of water flows from said pressurized cold water supply source into said intermediate water tank until both said water tanks are again filled and equilibrium of pressure between them is again reached, the temperature of water in said primary water tank being maintained continously at a higher end use temperature than water in said intermediate water tank which is heated by said coil assembly in said oven to an intermediate temperature level that is always below said end use temperature of the water in said primary water tank, said intermediate temperature level being maintained below said end use temperature by intermediate temperature limit means, said limit means including said coil assembly in said oven wherein said coil assembly comprises a pre-selected surface area and dimension to limit the heat taken up from said oven, and control means to operate said pump continuously to flow water continuously through said coil assembly from said intermediate water tank when the temperature in said oven is above a pre-selected level.

4,483,311

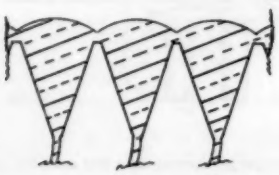
SOLAR POWER SYSTEM UTILIZING OPTICAL FIBERS, EACH FIBER FED BY A RESPECTIVE LENS

Ranald O. Whitaker, 4719 Squire Dr., Indianapolis, Ind. 46241

Continuation-in-part of Ser. No. 304,182, Sep. 21, 1981, abandoned, which is a continuation-in-part of Ser. No. 220,442, Dec. 29, 1980, abandoned, which is a continuation-in-part of Ser. No. 82,906, Oct. 9, 1979, abandoned. This application Jun. 27, 1983, Ser. No. 521,291

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—440 **1 Claim**



1. A solar power system comprising a matrix of concentrators, an orientation system, a set of optical fibers, and a receiver;

said orientation system being adapted for causing said matrix of concentrators to face the sun;

each of said concentrators being adapted for concentrating solar radiation upon a first end of a respective optical fiber of said set of optical fibers;

said optical fibers being adapted for receiving and transmitting said concentrated solar radiation;

said optical fibers converging to form a bundle, said convergence being in the vicinity of said matrix;

said receiver being adapted for receiving said solar radiation from the second ends of said optical fibers;

said matrix of concentrators being a transparent plate having a set of lenses molded into its front surface and a set of truncated cones molded into its rear surface;

each of said lenses being adapted for developing a solar image upon the truncated surface of a respective cone of said set of truncated cones; and

each of said optical fibers being adapted for receiving solar radiation delivered to the truncated surface of a respective cone of said set of truncated cones.

4,483,312

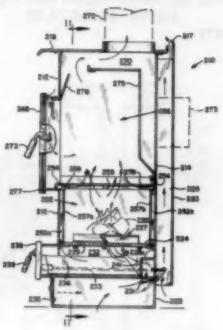
FREE STANDING STOVE

Donald S. Martenson, 14935 S. Leland Rd., Beavercreek, Oreg. 97004

Continuation-in-part of Ser. No. 165,046, Jul. 1, 1980, Pat. No. 4,359,040. This application Jul. 30, 1982, Ser. No. 403,484

Int. Cl.³ F24C *1/14*

U.S. Cl. 126—77 **12 Claims**



11. A stove comprising:

a firebox for initiating the combustion of fuel, said firebox including a lower portion with draft inlet means therein and being defined by upwardly extending walls;

a first conduit beneath said firebox for conveying combustion air to said draft inlet means;

an open secondary combustion chamber above said firebox for receiving gases of combustion from said firebox and continuing the combustion;

second conduit means surrounding said walls of said firebox for conveying combustion air to said secondary combustion chamber and for preheating the combustion air; and

a third conduit for conveying the gases of combustion from said secondary combustion chamber.

4,483,313

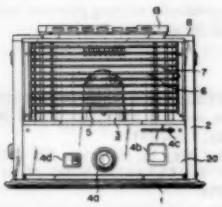
REFLECTION TYPE HEATER

Nobuyuki Kojima, and Etsuko Kawashima, both of Kamo, Japan, assignors to Toshiba Heating Appliances Co., Ltd., Kamo, Japan

Filed Feb. 7, 1983, Ser. No. 464,697

Int. Cl.³ F24C *3/04*

U.S. Cl. 126—92 R **15 Claims**



1. A reflection type heater comprising:

combustion equipment for burning fuel;

a box-shaped housing having a front face with a front opening and a top face, and containing the combustion equipment therein;

a reflecting member provided behind the combustion equipment for reflecting radiant heat from the combustion equipment toward the front opening;

a cartridge tank provided behind the reflecting member for storing fuel and supplying it to the combustion equipment;

a top plate laid on the top face of the housing, and having a first region in front of the reflecting member and a second region behind the reflecting member, the top plate including an inlet opening provided to the second region for inserting the cartridge tank into the housing and a cover for opening and closing the inlet opening; and

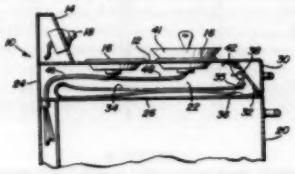
a guard protruding upward from the surface of the top plate and extending so as to substantially only surround the first region of the top plate.

4,483,314

COOKING RANGE WITH FIRE EXTINGUISHING FACILITY

Charles E. Parker, Jr., and Marshall T. Singleton, both of Washington, N.C., assignors to James A. Hackney, III, Washington, N.C.

Filed Jun. 9, 1983, Ser. No. 502,607
Int. Cl.³ F24C *15/10*; A62C *7/00*
U.S. Cl. 126—221 **20 Claims**



1. A cooking range comprising a cabinet provided with at least one heating element adapted to be exposed when cooking thereon, means defining a blanket-receiving compartment associated with the cabinet, a flame-retardant blanket stowed in the compartment, means providing ready access to the stowed blanket for a user of the range whereby, in the event of a fire occurring on said element, the blanket may be withdrawn from the compartment and laid over the fire, at least one elongate handle, and swivel means attaching the handle to the blanket for swinging outward of the handle outwardly of said cabinet when access is provided to the blanket to facilitate withdrawal of the blanket and laying of the blanket over said element.

4,483,315

FIREPLACE CHIMNEY CAP AND DAMPER COMBINATION

Thomas Carriveau, 11359 Grand Oak, Grand Blanc, Mich. 48439

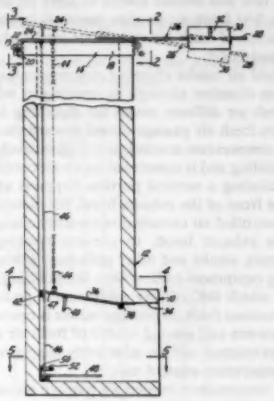
Filed Jan. 7, 1982, Ser. No. 337,703
Int. Cl.³ F23L *3/00*
U.S. Cl. 126—286 **7 Claims**

1. In a chimney cap device for a chimney mounted on a fireplace and having a damper plate movable between relatively open and closed positions in the lower end of said chimney, the combination comprising:

a pivotal mounting for said cap on one side of the upper open end of said chimney;

a vertically oriented operating rod connected to said cap for pivotally moving it between closed and open positions;

an opening formed through said damper plate to allow passage of said rod therethrough for operation of said cap relative to said damper plate and to pass a limited hot air flow therethrough in both positions of said damper plate; and



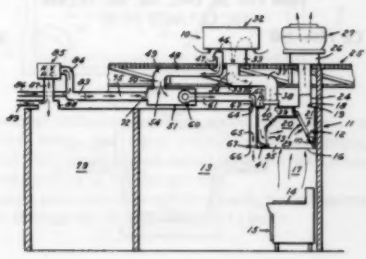
a flexible means connecting said damper plate and said cap for providing movement between aforesaid open and closed positions.

4,483,316

AIR VENTILATION SYSTEM

Frederick F. Fritz, Oxford, and Ralph L. Daigle, Ortonville, both of Mich., assignors to Alco Foodservice Equipment Company, Miami, Fla.

Filed Oct. 11, 1983, Ser. No. 540,370
Int. Cl.³ F24C *15/06*; F23J *11/00*
U.S. Cl. 126—299 D **14 Claims**



1. An air ventilation system for cooking equipment having an exhaust hood disposed thereover in a kitchen in a building having a heating-ventilating and air-conditioning means for temperature treating the air in the building, characterized in that:

(a) the exhaust hood is provided with a collection chamber disposed upwardly from and over the cooking equipment;

(b) an exhaust chamber is formed in said exhaust hood and communicates with said collection chamber through an opening therebetween;

(c) filter means is operatively mounted in said opening between said collection chamber and said exhaust chamber;

(d) an exhaust passage means is connected to said exhaust chamber and extends from the kitchen to the exterior of the building in which the exhaust hood is mounted;

(e) an exhaust fan means is operatively mounted on the exterior end of said exhaust passage means for exhausting a predetermined volume of air from said collection chamber and through the filter means, to exhaust cooking va-

pors, odors, fumes, smoke and other pollutants from the collection chamber;

(f) a first and second source of fresh air is provided;

(g) a first fresh air passage means is connected to said first source of fresh air and an air intake chamber in said exhaust hood;

(h) said air intake chamber communicates with said collection chamber through an opening in which is disposed a fresh air diffuser means for directing fresh air from the first fresh air passage means toward the filter means;

(i) a temperature control unit is operatively mounted in said building and is connected by an air curtain passage means, including a vertical portion disposed adjacent and along the front of the exhaust hood, for directing a temperature controlled air curtain downwardly along the front side of the exhaust hood, to prevent cooking vapors, odors, fumes, smoke and other pollutants arising from the cooking equipment to flow into the building from the kitchen in which the cooking equipment is positioned;

(j) a second fresh air passage means is operatively connected between said second source of fresh air and said temperature control unit for selectively supplying fresh air to said temperature control unit;

(k) a temperature treated air passage means is provided for selectively supplying temperature treated air to the temperature control unit from a source of the same which is exterior to the kitchen in which the cooking equipment is positioned; and,

(l) said second fresh air passage means and temperature treated air passage means each includes flow control means for selectively controlling the flow of any combination volume of fresh air and temperature treated air to the temperature control unit, for forming an air curtain of a predetermined temperature.

4,483,317

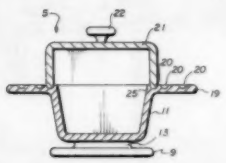
AMBIENT STEAM CAPTURING DEVICE

Pamela Masters, 2934 Mosquito Rd., Placerville, Calif. 95667

Filed Feb. 26, 1982, Ser. No. 352,935

Int. Cl.³ A47J *27/00*

U.S. Cl. 126—390 **1 Claim**



1. A serving dish comprising in combination:

a food receiving area defined by a bottom wall, a peripheral side wall extending from and circumscribing said bottom wall,

a laterally extending peripheral lip integral with, emanating from and circumscribing an outer face of said peripheral sidewall, and spaced from a top edge thereof forming a support shoulder with said top edge which sealingly engages a rim of an associated pot used in cooking when said serving dish is inverted and covers the pot, whereby moisture escaping from the pot as steam heats said dish,

a pedestal,

a support base connected to an outer face of said bottom wall through said pedestal interposed therebetween and integrally formed therewith,

said support base having substantially the same surface area as said bottom wall for stability, said pedestal necked down substantially less in horizontal section than said base, whereby heat migration from the steam to the base is retarded and said serving dish base exhibits a temperature difference relative to said food receiving area to allow said base to be placed directly on a table surface without heat damage to the table surface,

and a shelf-type flange extending horizontally of said peripheral lip, said flange including an upper face having a plurality of radially-spaced circumferential troughs formed therein, whereby one said dish can accomodate a plurality of pots.

4,483,318

BOREHOLE RESERVOIR

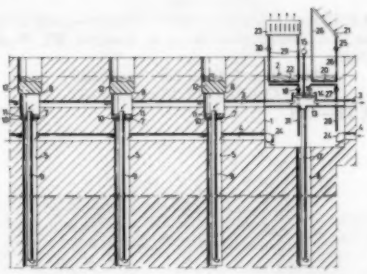
Peter Margen, Nyköping, Sweden, assignor to Sonstore KB, Nykoping, Sweden

Filed May 11, 1983, Ser. No. 493,549

Claims priority, application Sweden, May 18, 1982, 8203112

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—400 **6 Claims**



1. A borehole reservoir for the storage, and particularly for the seasonal storage, of heat in rock or similarly dense ground, including a plurality of substantially vertical boreholes (**5, 6**) each having a centrally located pipe (**9, 17, 32**) of less diameter than the surrounding borehole which pipe is open at the bottom thereof and which extends to the vicinity of the bottom of respective boreholes, the upper parts of the boreholes and pipes being in communication with water-supply lines and water-return lines, said lines in turn being connected to a device (**16**) for circulating the water through the lines and the pipes and annular passages located between said centrally located pipes and walls of said boreholes, and further including pipelines which are connected to heat-producing devices (**21**) and heat-consuming devices (**23**) for alternate supply and removal of heat to and from respectively the water circulating in the reservoir, characterized in that the vertical boreholes (**5, 6**) are unlined and arranged to intersect a plurality of substantially horizontal boreholes (**3, 4, 3'**) which extend outwardly in a spoke-like manner from a centrally located shaft containing water up to a ground-water level and which are located beneath the ground-water level and serve as said water-supply and water-return lines, and through which the upper parts of said vertical boreholes (**5, 6**) and said centrally located pipes (**9, 17, 32**) communicate with the central shaft (**1**) and the device (**16**) for circulating the water.

4,483,319

SOLAR POWER SUPPLY FOR LOAD REQUIRING HIGH STARTING CURRENT

Khanh Dinh, Gainesville, Fla., assignor to Pulstar Corporation, Gainesville, Fla.

Filed Apr. 15, 1983, Ser. No. 485,502

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—417 **13 Claims**

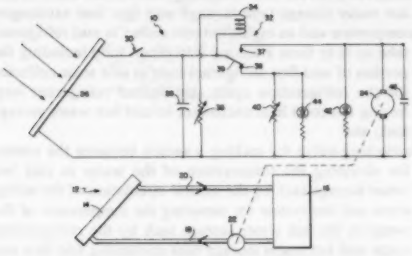
1. A circuit for converting solar energy into electricity for a load, comprising:

a photovoltaic panel for converting solar energy into electric energy having a voltage and a current;

a load requiring a starting current which is higher than the minimum running current;

charge storage means connected to said photovoltaic panel for receiving current produced by said panel and storing a charge in response thereto; and

means for connecting said photovoltaic panel and said charge storage means to said load to discharge said charge storage means through said load and produce an initial



pulse of starting current through said load when the charge of said charge storage means has reached a predetermined level greater than the output of said photovoltaic panel, wherein said predetermined level corresponds to an operating range sufficient for starting said load, whereby the charge of said charge storage means initially starts said load and the electric energy from said photovoltaic panel maintains said load operational.

4,483,320

SOLAR POWERED FLUID HEATING SYSTEM

Otto K. Wetzel, Jr., and Glenn E. Weadock, both of Dallas, Tex., assignors to Wetzel Enterprises, Inc., Dallas, Tex.

Filed Feb. 7, 1983, Ser. No. 464,717

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—422 **21 Claims**

1. A solar powered fluid heating system comprising:

a predetermined quantity of refrigerant;

a thermal collector for heating the refrigerant and including:

(a) first and second spaced apart panels, at least the first panel being formed from a thermally conductive material;

(b) connector panel means extending between and connected to the first and second panel for cooperation therewith to define a substantially closed refrigerant heating chamber;

(c) inlet means for admitting liquid refrigerant to the refrigerant heating chamber;

(d) the first and second panels comprising the thermal collector extend in divergent planes to define a refrigerant receiving zone wherein the first and second panels are positioned relatively close to one another and a refrigerant discharge zone wherein the first and second panels are positioned relatively apart from one another;

(e) outlet means for exhausting vapor refrigerant from the refrigerant heating chamber; and

(f) baffle means positioned within the refrigerant heating chamber and connected between the first and second panels for preventing both inward and outward movement therebetween;

(g) said baffle means being spaced apart from the connector panel means to facilitate refrigerant flow through the refrigerant heating chamber;

separator means for receiving heated refrigerant from the thermal collector and for separating the vapor component of the heated refrigerant from any liquid component thereof;

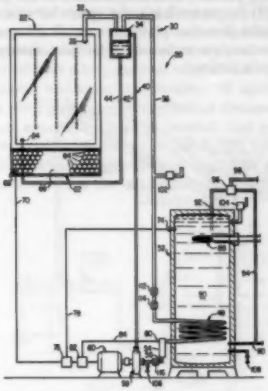
a condenser for receiving the vapor component of the heated refrigerant from the separator means;

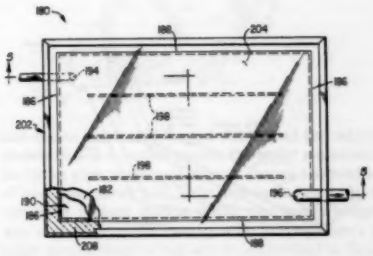
a supply of fluid to be heated;

means for transferring heat from the refrigerant in the condenser to the fluid and thereby returning the refrigerant vapor to the liquid phase;

vapor conduit means extending from the separator means to the condenser;

liquid conduit means extending from the condenser to the inlet means of the thermal collector;





said thermal collector, separator means, condenser, vapor conduit means and liquid conduit means comprising a closed refrigerant circuit which contains the predetermined quantity of refrigerant; and

refrigerant pressurizing means for causing the refrigerant to flow through the closed refrigerant circuit.

4,483,321

SOLAR HEAT COLLECTOR SYSTEM

Timothy E. Sharpe, 305 Church St., Lakehurst, N.J. 08733

Division of Ser. No. 230,307, Jan. 30, 1981, Pat. No. 4,360,005. This application Aug. 16, 1982, Ser. No. 408,461

Int. Cl.³ F24J *3/02*

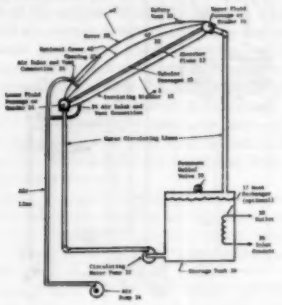
U.S. Cl. 126—426 **16 Claims**

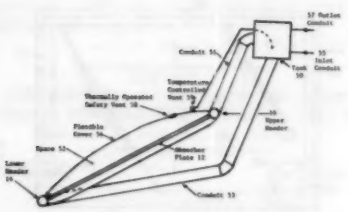
1. A method for heating a fluid by solar radiation energy, comprising the steps of:

(a) providing a solar heat collector comprised of an absorber plate having a plurality of passages incorporated therein for the circulation of fluid therethrough, said collector having a transparent cover sheet spaced above the absorber plate by gas pressure, and having return means to assure that the cover returns to an inactive position when not inflated, and exposing said collector to solar radiation;

(b) pressurizing the space between the cover sheet and the absorber plate to inflate the cover during a heat absorption mode of operation, and permitting a fluid to circulate through the plate passages so as to heat the fluid and permit transfer of said heated fluid to a storage tank means;

(c) venting gas from the space between the cover sheet and the absorber plate during a heat rejection mode, thereby permitting the cover to return to an inactive position allowing increased thermal contact between the cover and the heat absorber plate over a substantial portion of its solar exposure area to increase heat losses from the plate and thereby prevent overtemperature of the plate materials; and (d) re-pressurizing the space between the cover sheet and the absorber plate to increase the spacing therebetween whenever increased solar heat absorption to the fluid is again desired.





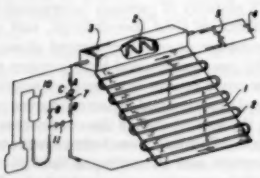
11. The solar heating method of claim 1, wherein the fluid circulation of step (b) occurs by gravity force only through the passages so as to transfer heat to a fluid storage tank device located at a level above the absorber plate, as in a thermal siphon system, and the venting gas is air which is vented from the space between the cover sheet and the absorber plate by a temperature operated vent device when the system temperature exceeds a predetermined range.

4,483,322

WATER HEATING APPARATUS

Kinya Mori, Aichi, Japan, assignor to Sanyo Machine Works, Limited, Aichi, Japan

Filed Apr. 15, 1982, Ser. No. 368,582
Claims priority, application Japan, Jul. 2, 1981, 56-104248
Int. Cl.³ F24J 3/02
U.S. Cl. 126—437 **2 Claims**



1. A water heating apparatus, comprising:

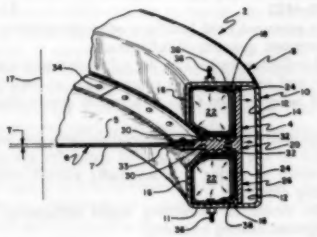
a hot water storage tank holding water to be heated;
a heat collecting plate for collecting solar heat;
a refrigerant tube or refrigerant tubes having a refrigerant sealed therein and extending to unite said hot water storage tank with said heat collecting plate to thereby form the first refrigerant loop having a first heat exchanger in said hot water storage tank, whereby during sunshine, the refrigerant naturally circulates to impart heat, which it receives from the heat collecting plate, to the water in said hot water storage tank through said first heat exchanger;
a compressor and an expansion unit united in said refrigerant tube so as to form a second refrigerant loop including the portion of said first refrigerant loop in said solar collector for the refrigeration cycle said second refrigerant loop having a second heat exchanger in said hot water storage tank; and
a switching valve for making a switch between the system for elevating the temperature of the water in said hot water storage tank by the natural circulation of the refrigerant and the system for elevating the temperature of the water in the hot water storage tank by the refrigeration cycle said hot water storage tank containing said first and second heat exchangers being undivided.

4,483,323

TENSIONING DEVICE FOR A STRETCHED MEMBRANE COLLECTOR

Lawrence M. Murphy, Lakewood, Colo., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 8, 1982, Ser. No. 440,205
Int. Cl.³ F24J 3/02
U.S. Cl. 126—438 **15 Claims**

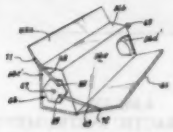


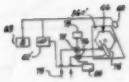
1. A solar concentrating collector comprising:
(a) an elastic membrane member for concentrating sunlight;
(b) a single frame member for holding said membrane member in plane and holding said membrane member in tension; and
(c) tensioning means releasably connected to said membrane member for varying the tension of said membrane member, said tensioning means being disposed at said frame in a manner to only enable said tensioning means to be said connected to said membrane member, said tensioning means being adapted to uniformly and symmetrically incrementally subject said membrane member to stretching forces, such that stresses produced thereby are distributed uniformly over a thickness of said membrane member and reciprocal twisting moments are substantially prevented from acting about said frame, the connection between said tensioning means and said membrane member enabling deflection and movement of said frame member to be substantially limited while said membrane member is being subjected to said stretching forces.

4,483,324
HEAT COLLECTING AND HEAT LOSS PREVENTING APPARATUS

Pierra H. Fromm, Baja California, Mexico, assignor to W. Keith, R. Watson, Alpine, Calif.; part interest

Filed May 16, 1983, Ser. No. 494,702
Int. Cl.³ F24J 3/02
U.S. Cl. 126—439 19 Claims





1. In solar heating apparatus,

(a) a generally horizontally elongated tank to contain liquid, the tank being solar radiation absorbing, and low intensity infra-red emitting,

(b) a housing associated with the tank and including glazing facing the tank and adapted to pass solar radiation for impingement on the tank,

(c) auxiliary panel means including upper and lower panels associated with the housing and pivotally movable between extended and collapsed positions so as to block heat loss from the tank at night,

(d) the panel means having reflecting surface or surfaces for reflecting solar radiation toward and through the glazing and toward the tank in panel extended position or positions, and

(e) means responsive to the intensity of said solar radiation automatically to move the panel means between said positions, said means including a drive rotor proximate an end of said elongated container, a drive connected to said rotor to rotate same, and members connected between said rotor and said upper and lower panels to simultaneously displace the upper panel relatively downwardly toward collapsed position as the lower rotor moves relatively upwardly toward collapsed position in response to rotor rotation.

4,483,325
SOLARMAT

Gerald L. Siemiller, 3566 Minto Ct., San Jose, Calif. 95123

Division of Ser. No. 317,836, Nov. 3, 1981, Pat. No. 4,396,007.
This application May 9, 1983, Ser. No. 493,067
Int. Cl.³ F24J 3/02
U.S. Cl. 126—444 7 Claims

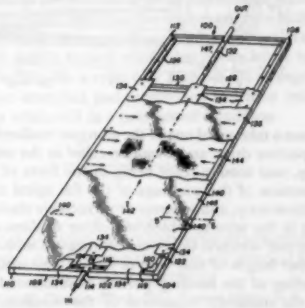
1. A solar heat exchanger, comprising:

a first thin film of a substantially planar configuration and formed of a polyester material having a thickness of approximately five thousandths of an inch;

a second thin film substantially indentical to the first thin film and bonded to the first thin film about the edges thereof, said first and second films enclosing a substantially planar space therebetween;

a mesh of dimensions substantially similar to the first and second films and positioned therebetween, said mesh substantially filling the planar space formed between the films, the films and the mesh together forming a solar panel, said solar panel including a plurality of inlet apertures formed through one thin film near each longitudinal edge thereof, and a plurality of outlet apertures formed through one thin film about a central longitudinal axis of the panel;

inlet means connected to said solar panel and adapted for connection to a heat transfer fluid supply for permitting a heat transfer fluid to enter the space formed therein, said inlet means including a pair of inlet pipes, each pipe being positioned near a longitudinal edge of the solar panel, said inlet pipes including a plurality of apertures formed therein abot said pipes' longitudinal dimensions, said plurality of apertures equal in number and spacing to said apertures formed in the solar panel, and adapted for mating with said inlet apertures in the solar panel to allow fluid to flow from the inlet means to the panel; and



outlet means connected to said solar panel and adapted for connection to a suction means, the outlet means including an outlet pipe positioned about a central longitudinal axis of said solar panel, said outlet pipe including a plurality of apertures formed therein about said pipe's longitudinal axis and adapted for mating with said apertures in said solar panel's longitudinal axis to allow fluid to flow from said panel to the outlet means, the outlet means being positioned distal to the inlet means such that said heat transfer fluid flow through the mesh covers approximately the entire region between the first thin film and the second thin film whereby said heat transfer fluid may be drawn by suction from the inlet means to the outlet means and solar radiation impinging on the solar panel is transferred to said fluid.

4,483,326
CURVATURE CONTROL MECHANISM IN ENDOSCOPES

Shiyouichi Yamaka, Kamifukuoka, and Hirohisa Ueda, Tokyo, both of Japan, assignors to Kabushiki Kaisha Medos Kenkyusho, Japan

Filed Apr. 20, 1982, Ser. No. 370,274
Claims priority, application Japan, Apr. 21, 1981, 56-58211[U]; Jul. 4, 1981, 56-99677[U]
Int. Cl.³ A61B 1/06
U.S. Cl. 128—4 10 Claims

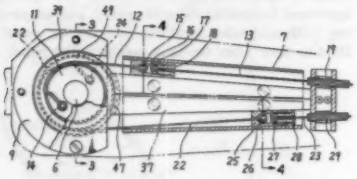
1. A curvature control mechanism in an endoscope having a manipulator unit, a flexible elongate tubular portion connected at one of its ends to the manipulator unit, a bendable portion at a forward end region of said flexible tubular portion, a knob member rotatably mounted on the manipulator unit, and control wires extending from the manipulator unit through the flexible tubular portion to the bendable portion so that the latter can be bent by the control wires in a selectively controlled manner through rotation of the knob member, said curvature control mechanism comprising:

a rotary shaft mounted in the manipulator unit adapted to be rotated by rotation of the knob member;

double cylinder type drum means including two drums fixedly mounted on the rotary shaft for rotation therewith;

a pair of elongate resilient strips, each resilient strip being wound around a respective drum in a flat spiral with a multiple winding, said resilient strips being wound around the respective drums in said multiple-winding flat spirals in mutually opposite directions; and

wherein one end of each of said resilient strips is coupled to a respective control wire such that rotation of said drums in one direction to effect bending of the bending portion



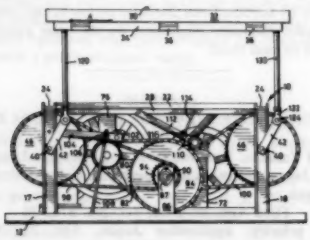
causes a take-up of one of the elongate resilient strips on its respective drum and a tension-relief in the other resilient strip, said tension-relief being in the form of a diametric expansion of the windings of the flat spiral of said other resilient strip, and wherein any excessive slackness occurring in the wire to which said other resilient strip is coupled and which is to be tension-relieved with respect to a proper length of that wire to be fed forwardly due to the bending of the bending portion is substantially absorbed by the diametric expansion of the windings of the flat spiral of said other resilient strip to which the wire is coupled with at least some tension being maintained in the wire.

4,483,327

RELAXATION MACHINE

David J. Graham, and Bruce C. Lloyd, both of R.R. 2, Orillia, Ontario, Canada L3V 6H2

Filed Jun. 16, 1982, Ser. No. 389,030
Int. Cl.³ A61H *1/02*
U.S. Cl. 128—25 R **3 Claims**



1. A machine for relieving stress in a human comprising:

an elongate horizontal platform having a length and width sufficient to carry a horizontally reclining human body through a circular movement, said circular movement being in a vertical plane perpendicular to the longitudinal axis of said platform;

rotary drive means adapted to move said platform along a circular path; and

a mechanical linkage connected to said platform and adapted to hold said platform so that its directional orientation stays the same as said platform moves along said circular path, said mechanical linkage including four parallel elongate members of equal length connecting said rotary drive means to said platform, said elongate members being rigidly connected to said platform at spaced apart locations;

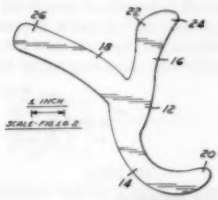
wherein said machine has no electrode or generator means for producing an electric field in the region of said platform.

4,483,328

CHIROPRACTIC INSTRUMENT

Roman A. Wolocko, 5881 Larkins, Detroit, Mich. 48210

Filed Jun. 18, 1982, Ser. No. 389,610
Int. Cl.³ A61H *7/00*
U.S. Cl. 128—67 **3 Claims**



1. A chiropractic instrument adapted to be manually employed by a therapist for applying pressure to selected surface portions of a patient's body so as to effect adjustment of underlying joints and tissues, said instrument being a substantially rigid flat member consisting of a central hub portion and three legs wherein the first leg integrally extends from said hub portion in an arc at substantially constant first radius of curvature and terminates in a blunt rounded first tip, the second leg integrally extends from said hub portion oppositely of said first leg, said second leg terminates in a widened end which tapers to a blunt rounded second tip oriented substantially parallel to said rounded first tip, and the third leg integrally extends from said hub portion at an acute angle with respect to said second leg, said third leg being arcuate in the direction of said first leg at a second substantially constant radius of curvature which is greater than said first radius of curvature, said third leg being of substantially uniform cross section throughout its length and terminating in a rounded blunt third tip, said first, second and third legs being coplanar with said hub portion, whereby one can selectively utilize said first leg for applying simulated thumb pressure, said third leg for applying more concentrated pressure and said second leg for applying concentrated or separating pressure.

4,483,329

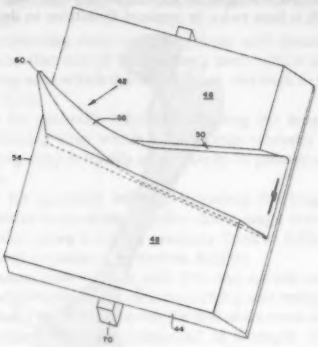
DEVICE AND METHOD FOR THE REDUCTION OF LUMBAR LORDOSIS

Desmond E. Shamos, 6565 Spencer Hwy., #2902, Pasadena, Tex. 77505

Continuation of Ser. No. 305,176, Sep. 24, 1981, abandoned. This application Aug. 17, 1983, Ser. No. 523,849
Int. Cl.³ A61F *5/00*
U.S. Cl. 128—69 **9 Claims**

1. A method of reducing lumbar lordosis in a patient, the method comprising causing a patient to lie supine on a surface, and positioning a support device in the sacral area of the pa-

tient to support the apex of the patient's sacrum without providing support for the base of the patient's sacrum for the



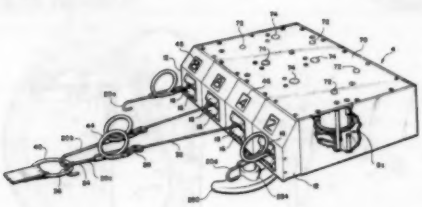
patient's body weight to displace the sacral base posteriorly and to displace the apex anteriorly to reduce lumbar lordosis.

4,483,330

CONSTANT TENSION TRACTION DEVICE

Stephen C. Jacobsen; David F. Knutti, both of Salt Lake City, and Richard D. Luntz, Murray, all of Utah, assignors to Motion Control, Inc., Salt Lake City, Utah

Filed Jul. 22, 1982, Ser. No. 400,914
Int. Cl.[3] A61H 1/02
U.S. Cl. 128—75 10 Claims



1. A constant tension traction device comprising
a framework,
a frame member movably mounted in said framework to move between first and second positions,
means for biasing said frame member toward said first position,
a spool rotatably mounted on said frame member,
a spring element coupled to said spool for providing a substantially constant tension on the spool as the spool is rotated in a first direction, and for tending to cause the spool to rotate in a second direction, opposite said first direction, after the spool has been rotated in the first direction,
cable means wound about said spool so that as the cable means is pulled outwardly in a certain direction from the framework, the frame member is moved to the second position and the spool is rotated in said first direction, and
brake means mounted on said framework for contacting and inhibiting rotation of said spool when the frame member is in the first position, said brake means thereby preventing rapid rotation of the spool in the second direction when the cable means is released.

4,483,331

ROD-TYPE PENILE IMPLANT

Robert E. Trick, Racine, Wis., assignor to Medical Engineering Corporation, Racine, Wis.

Filed Sep. 16, 1982, Ser. No. 418,695
Int. Cl.[3] A61F 5/00
U.S. Cl. 128—79 1 Claim

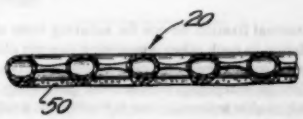
1. In an improved rod-type penile implant having a relatively stiff proximal portion for positioning inside the corpus cavernosum adjacent the pubis for supporting the implant, a longer distal relatively stiff portion for positioning in the corpus cavernosum of the pendulous penis and a hinge separating the distal and proximal portions, the improvement which comprises a distal portion having an inner core consisting of a main body which is united to and reinforced by an outer tubular fabric sleeve which has a relatively high tensile strength and which was first stretched and prestressed and then united to the main body while still in a prestressed condition.

4,483,332

CONSTRUCTION AND METHOD FOR FORMING AN ORTHOPEDIC CAST AND METHOD OF PRODUCING THE CONSTRUCTION

Bruce Rind, 104-40 Queens Blvd.-20G, Forest Hills, N.Y. 11375

Filed Jan. 3, 1983, Ser. No. 455,361
Int. Cl.[3] A61F 5/04
U.S. Cl. 128—89 R 19 Claims



1. A construction for forming an orthopedic cast comprising: a flexible network of non-porous tubing substantially devoid of air and having at least one inlet means receptive of a flowable fluid for rendering the network substantially rigid, wherein the network has two main faces including portions of the outer surface of the tubing and further comprising cushioning means disposed on one main face of the network and comprising a sponge base on the outer surface of the tubing.

4,483,333

ORTHOPEDIC CAST

Lloyd H. Wartman, Eden Praire, Minn., assignor to WRF/Aquaplast Corporation, Ramsey, N.J.

Filed Jun. 1, 1982, Ser. No. 383,758
Int. Cl.[3] A61F 5/04
U.S. Cl. 128—90 10 Claims

1. An orthopedic cast, comprising a mixture of poly (epsilon-caprolactone) having a formula

$$-O-(CH_2)_5-CO-_x$$

where x makes the weight average molecular weight greater

than 5,000 with polyethylene in an amount in the range from 15% to 30%, the mixture having a softening temperature in the

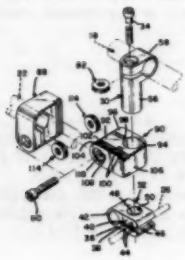
range from 50° C. to 100° C. with a half-time crystallization at 36° C. of between 0.5 minute and 10.0 minutes.

4,483,334

EXTERNAL FIXATION DEVICE

William M. Murray, 145 Bryce Rd., Camp Hill, Pa. 17011

Filed Apr. 11, 1983, Ser. No. 483,622
Int. Cl.³ A61F *5/04*; B25G *3/36*; E04G *7/00*; F16B *00/00*
U.S. Cl. 128—92 A **32 Claims**



1. An external fixation device for securing bone segments in known relation to each other comprising two pin clamp assemblies adapted to engage bone pins extending from bone segments, a bridge extending between the pin clamp assemblies and two adjustable assemblies each joining the bridge to a pin clamp assembly, at least one of the adjustable assemblies including a pair of members, a clamp on one member adjustably securing such member to the bridge and a clamp on the other member adjustably securing such member to one pin clamp assembly, each member including a clamp surface engagable with the clamp surface on the other member for locking the two members together, spring means biasing the clamps toward open positions and a common operator joining the members together with the clamp surfaces facing each other, said operator engaging said clamps such that acutation of the operator compresses the spring means, closes the clamps and forces said surfaces against each other to form a rigid connection between the bridge and the one pin clamp assembly.

4,483,335

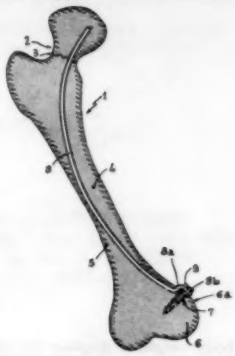
NAILS FOR FEMORAL FRACTURES

Alain Tornier, Crolles, France, assignor to Tornier S.A., Saint Ismier, France

Filed Jun. 2, 1983, Ser. No. 500,646
Claims priority, application France, Jun. 2, 1982, 82 09838
Int. Cl.³ A61F *5/04*
U.S. Cl. 128—92 BC **3 Claims**

1. In a nail for the osteosynthesis of fractures of femoral necks, formed of a resilient pre-curved rod having an inner end engageable into the medullary cavity of the femur through a lateral perforation drilled through the inner side of said femur in the vicinity of the process thereof and an outer end which remains exterior to said femur, with said perforation having an edge,

said rod comprising in the vicinity of said outer end a portion which is bent twice in opposed directions to determine a



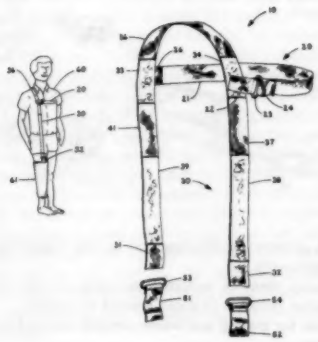
shoulder which protrudes inwardly with respect to the curvature of said rod and which abuts against the edge of said perforation to retain said nail longitudinally with respect to said femur.

4,483,336

UNIVERSAL SUSPENSORY LEG CAST AND SPLINT SUPPORT

Earl W. Deitch, 5606 Browne St., Omaha, Nebr. 68104

Filed Jun. 16, 1980, Ser. No. 160,142
Int. Cl.³ A61F *5/40*
U.S. Cl. 128—94 **3 Claims**



1. In combination with a leg cast, splint and the like, fitted onto a patient, the invention comprising,

an elongated shoulder strap having a first end, a second end, and a mid-point, means for attaching said first end of the shoulder strap to the cast, and means for attaching said second end of the shoulder strap to the cast,

said shoulder strap being draped over that shoulder which is on the same side of the patient as the leg onto which the cast is fitted whereby said first and second ends are suspended in substantially vertically upright relation from that portion adjacent the mid-point which engages the patient's shoulder,

an elongated positioning strap having a front end and a back end wherein said front end of the positioning strap is attached to the shoulder strap between said first end of the shoulder strap and said mid-point of the shoulder strap

and wherein said back end of the positioning strap is attached to the shoulder strap between said second end of the shoulder strap and said mid-point of the shoulder strap,

said positioning strap extending from said shoulder strap, around that side of the patient's torso which is opposite the leg onto which the cast is fitted, and back to the shoulder strap,

means for generally infinitely adjusting the length of the positioning strap within a finite range whereby said positioning strap is readily adjustable to fit patients of various sizes,

means for generally infinitely adjusting the length of the shoulder strap within another finite range whereby said shoulder strap is readily precisely fitted to different types of casts on patients of various heights,

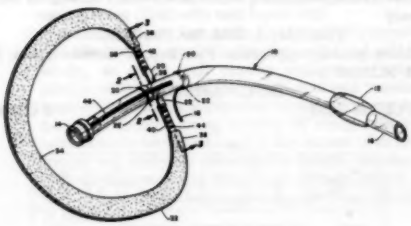
said means for attaching said first and second ends of the shoulder strap to the cast comprising cast embedded tabs having a loop and wherein the first and second ends of the shoulder straps are comprised of a length of material co-acting in a loop with a length of the shoulder strap to removably secure said length of material to the length of shoulder strap and wherein the described strap loop is positioned through said tab loop.

4,483,337

ENDOTRACHEAL TUBE RETAINER AND TUBE SIZE INDICATOR

Michael W. Clair, 8806 Willis Ave. #22, Panorama City, Calif. 91402

Filed Sep. 30, 1982, Ser. No. 431,335
Int. Cl.³ A61M *25/02*
U.S. Cl. 128—207.17 **7 Claims**



1. In an endotracheal tube having an inflatable cuff on one end for insertion and sealing in the trachea and a connector at the other end for attachment to a gas supply tube the improvement comprising:

at least one pair of retaining tabs integrally attached to the exterior surface of said endotracheal tube nearest the connector end;

said retaining tabs positioned substantially perpendicular to the longitudinal axis of said tube and being of sufficient length to wrap securely around said endotracheal tube such that the retaining tabs overlap each other when not in use;

a headband;

connector means on the ends of said pair of tabs for connecting said headband;

said means for connecting said headband also constructed to hold said tabs securely in a wrapped position around said tube;

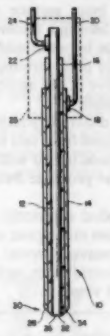
whereby after placement of said endotracheal tube in the trachea said headband holds said tube in place.

4,483,338

BI-POLAR ELECTROCAUTERY NEEDLE

William G. Bloom, Menlo Park, and Gary I. Geschwind, Palo Alto, both of Calif., assignors to Raychem Corporation, Menol Park, Calif.

Filed Jun. 12, 1981, Ser. No. 272,853
Int. Cl.³ A61B *17/39*
U.S. Cl. 128—303.13 **9 Claims**



1. A bi-polar electrocautery needle, comprising:

an inner electrode;

an outer electrode concentric with the inner electrode; said electrodes having one end defining an operable tip and an opposed end adapted to be connected to a source of power; and

insulating-locking means disposed between the electrodes, the insulating-locking means being in compression exerting a force in the radial direction on both electrodes, said insulating-locking means locking the electrodes in fixed relation to one another and insulating the electrodes from each other.

4,483,339

VASCULAR SURGERY ROLL

Rolando Gillis, 10721 S.W. 49th Terrace, Miami, Fla. 33165

Continuation of Ser. No. 343,864, Jan. 29, 1982, abandoned. This application Feb. 29, 1984, Ser. No. 584,765
Int. Cl.³ A61B *17/04*
U.S. Cl. 128—334 R **3 Claims**

1. A blood vessel support structure designed to support portions of opened blood vessels surrounding an opening therein during closing of the opening, said support structure comprising,

a roll formed from a length of strand wound upon itself to form windings, said windings collectively defining the configuration of said roll to include:

(a) an outer surface dimensioned and disposed for contronting, substantially supporting engagement with an inner surface of the blood vessel in which it is positioned,

(b) a first end and a second end each integrally formed at respective opposite ends of said outer surface,

(c) a centrally disposed channel extending coaxially through said roll and along the length thereof between said first and said second ends, said channel disposed and structured to allow blood flow therethrough and defining a substantially cylindrical inner surface spaced inwardly a predetermined distance from said outer surface along at least a major portion of the length thereof,

(d) said windings successively extending from said outer surface to said inner surface to define a continuous cylindrical wall having a thickness equal to said predetermined distance between said outer surface and said inner surface, said predetermined distance dimensioned to be determinative of the amount of support presented to the blood conduit;

a pigtail defined by a distal extremity of said length of strand and disposed to extend from said inner surface through an aperture means formed in said wall outwardly therefrom a sufficient distance to protrude through the opening of the blood vessel,

whereby tension applied exteriorly of the blood vessel to said pigtail will cause said strand to be unwound along its length and a successive removal of said windings from said inner surface to said outer surface and removal of said roll from the blood vessel.

4,483,340

DILATATION CATHETER

Thomas J. Fogarty, 770 Welch Rd., Palo Alto, Calif. 94304, and Thomas B. Kinney, Mountain View, Calif., assignors to Thomas J. Fogarty, Palo Alto, Calif.

Filed Oct. 20, 1980, Ser. No. 198,529

Int. Cl.³ A61M *29/02*

U.S. Cl. 128—344 **7 Claims**

6. A dilatation catheter comprising an elongated flexible tubular body member, a tip member in spaced relation to the distal end of the body member, an annular inflatable bag interconnecting the tip member and the distal end of the body member, and means comprising a selectively removable first element and a non-removable second element extending through the body member and bag and attached to the tip member for axially rotating the tip member and thereby axially twisting the bag.

4,483,341

THERAPEUTIC HYPOTHERMIA INSTRUMENT

Eleonora M. Witteles, Rancho Palos Verdes, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 9, 1982, Ser. No. 448,114

Int. Cl.³ A61F *7/00*

U.S. Cl. 128—402 **11 Claims**

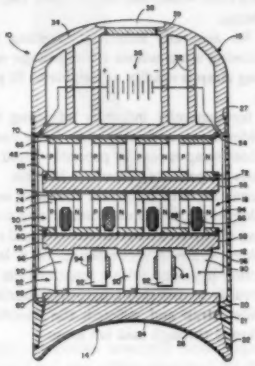
1. A hypothermia instrument for the application of cytostatic freezing temperatures to selected portions of the body, said instrument comprising:

an outer casing;

an outwardly concave cold end of heat conducting material at a first end of the casing;

a hot end of heat conducting material at a second end of the casing opposite the first end;

an array of thermally consecutive cooling means having serially increasing cooling ability disposed between the hot end and the cold end, the hot end serving as a heat sink for a thermoelectric Peltier first cooling means, said first cooling means serving as a heat sink for a thermoelectric-thermomagnetic Peltier second cooling means, said second cooling means serving as a heat sink for a thermomagnetic Ettingshausen third cooling means, the third cooling means serving as a heat sink for the cold end and pumping heat therefrom through the preceding cooling means to the hot end;



means providing electric current to said array and means for interrupting said current,

said array being capable of producing a cold end temperature of about 100° kelvin.

4,483,342

DIAGNOSTIC RADIOLOGY SYSTEM FOR ANGIOGRAPHIC X-RAY EXAMINATIONS

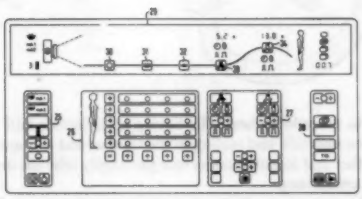
Rolf Pfeifer, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 6, 1982, Ser. No. 375,459

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1981, 3122098

Int. Cl.³ A61B *6/00*

U.S. Cl. 128—653 **3 Claims**



1. A diagnostic radiology system for angiography x-ray examinations, comprising an image intensifier television chain, an image subtraction device, connected thereto, including at least one image memory for storing image data which is subtracted from image data which occurs at other times than the stored image data to provide subtraction images, a display device for displaying the subtraction images, and a control device for controlling image processing, a central operating console is present having display means for representing successive individual stages of an angiographic examination sequence, which display means are connected to the control device and are controlled by the latter in such a fashion that they display the respective examination stage of said examination sequence.

4,483,343
ULTRASONIC APPLICATOR

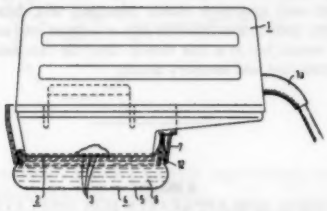
Johann Beyer, Baiersdorf, and Walter Derndinger, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 17, 1982, Ser. No. 349,453

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1981, 3109040

Int. Cl.³ A61B *10/00*

U.S. Cl. 128—660 **6 Claims**



1. An ultrasonic applicator system comprising

(a) an ultrasonic head with transducer element means which transmits ultrasonic signals to and receives echo signals from a body under examination, said transducer head having an application surface for applying said transducer head to a body surface of said body under examination when ultrasonic signals are to be transmitted into comparatively deep-lying regions of said body,

(b) ultrasound coupling means providing a liquid precursory path between said application surface and said body surface when ultrasonic signals are to be transmitted into comparatively nearer regions of said body, said coupling means comprising

(b1) a sack containing a liquid, said sack comprising a completely closed casing of expandible material providing for a flexible coupling with said body surface, said casing being filled with said liquid, and

(b2) mounting means for readily and detachably mounting said filled sack as a unit on the ultrasonic head, said sack having an outer wall portion engaged in intimate contact with said application surface of said transducer head when said sack is mounted on said ultrasonic head, said sack thereby being capable of being selectively applied to the ultrasonic head in the manner of an elastic spacer, and said sack allowing for flexibly varying the distance between said transducer element means and said body surface, thereby altering the scanning depth in said body.

4,483,344
DEVICE FOR POSITIONING CARDIOGRAPHIC SENSOR

Oleg J. Atkov, Petrovskaya alleya, 18, kv. 13, Moscow; Anatoly V. Popov, ulitsa Mira, 11, kv. 23, Mytischi Moskovskoi oblasti; Nurmukhamed M. Mukhariyamov, ulitsa Bronnaya, 29, kv. 73, Moscow; Vladimir F. Baranov, prospekt Koroleva, 2, kv. 23, Kaliningrad; Jury N. Belenkov, ulitsa Volgina, 9, korpus 1, kv. 84, Moscow; Alexandr N. Frolov, ulitsa Vokzalnaya, 14, kv. 39; Nikolai G. Odintsov, prospekt Koroleva, 8, kv. 48, both of Kaliningrad, and Galina A. Fomina, Pribrezhny proezd, 1, korpus 1, kv. 64, Moscow, all of U.S.S.R.

Continuation of Ser. No. 221,283, Dec. 30, 1980, abandoned. This application Mar. 14, 1983, Ser. No. 473,262

Int. Cl.³ A61G *10/00*

U.S. Cl. 128—661 **8 Claims**

1. In an apparatus for taking cardiograms having an echocardiograph and an electrocardiograph, a device for positioning and for fixing the position of an echosignal sensor and the positions of sensors of electric signals, said echosignal and electric signal sensors being connected, respectively, to said echocardiograph and said electrocardiograph, said device comprising:

a base,

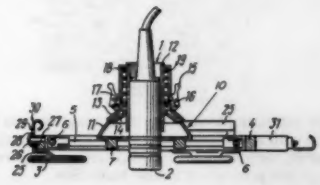
means for fixing the base on the patient's body within the zone under examination,

a movable carriage,

two mutually perpendicular guideways carried by said base for mounting and for guiding movement of the movable carriage,

retainers for locking the carriage in a required position in the guideways,

a swivel head rotatable with respect to said carriage about a common point to be examined and having a sleeve for accommodating the echosignal sensor and for holding said echosignal sensor in contact with the patient's body, said swivel head being rotatable to place said echosignal sensor in one of several monitoring positions while said carriage is locked in the required position in said guideways, said



swivel head and sleeve being rotatable about the common point, wherein the swivel head incorporates a hemispherical case with a flat base mounted on the carriage and defining a through opening in a central portion thereof for said sleeve and the swivel head further including two partly spherical members carrying said sleeve and embracing the hemispherical case, one from outside and the other from inside;

means for mounting said members to allow said members to be moved together and apart so that when said members are moved apart, said members can be swivelled along with the sleeve to an angle with respect to the common point to be examined, and when said members are moved together, said members and the sleeve are fixed rigidly in position; and

at least three sockets connected to and electrically insulated from said base, said sockets adapted for accommodating said sensors of electric signals.

4,483,345
PRESSURE MEASURING SYSTEM WITH ULTRASONIC WAVE

Hirohide Miwa, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 4, 1982, Ser. No. 405,143

Claims priority, application Japan, Aug. 8, 1981, 56-124588

Int. Cl.³ G01N *29/02*

U.S. Cl. 128—662 **38 Claims**

1. An ultrasonic pressure measuring system for measuring a pressure of a measuring area in a measuring medium, comprising:

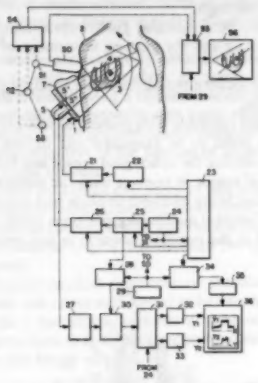
means for generating low frequency ultrasonic waves in the measuring medium, said low frequency ultrasonic waves generating fine bubbles which create high and low harmonic ultrasonic waves, in the measuring medium, the measuring medium having a critical pressure of bubble formation,

means for generating high frequency ultrasonic waves in the measuring medium;

means, operatively connected to the means for generating the low frequency ultrasonic waves and the means for

generating the high frequency ultrasonic waves, for detecting the generation of the fine bubbles, and

means, operatively connected to the means for detecting the generation of the fine bubbles, for measuring the pressure



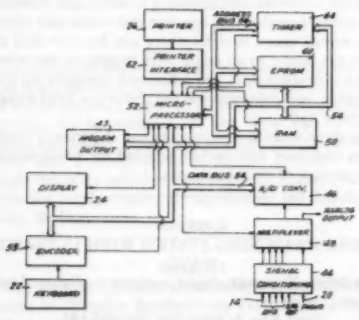
in the measuring area of the measuring medium in accordance with a relationship between the measuring medium pressure, the low frequency ultrasonic wave pressure, and the critical pressure of bubble formation.

4,483,346

ELECTROCARDIOGRAPH WITH DIGITALLY-PRINTING WAVEFORM DISPLAY

Martin J. Slavin, Dix Hills, N.Y., assignor to Intech Systems Corp., Hauppauge, N.Y.

Filed Aug. 25, 1983, Ser. No. 526,260
Int. Cl.[3] A61B 5/04
U.S. Cl. 128—710 **20 Claims**



1. An electrocardiograph for connection to sensors outputting analog electrical signals, comprising:

at least one sensor outputting analog electrical signals;

sampling means for selectively sensing at intervals at least one of such analog signals from at least one of said sensors;

analog to digital conversion means for receiving said sampled analog signals and outputting digitized signals corresponding thereto;

memory means including a plurality of addresses for storage of data therein;

processor means for writing said consecutively sampled digitized signals representative of a predetermined duration of the at least one analog sensor output signal into said addresses of said memory means for storage therein in consecutive order;

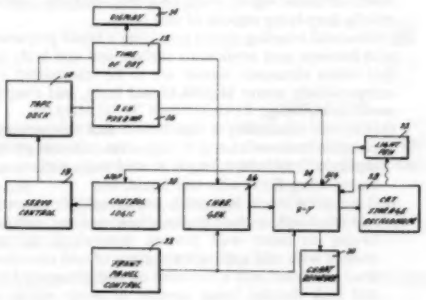
printer means for recording on a print medium in response to digital data input thereto, said processor means being further adapted to automatically read said stored date from said addresses in said memory means in said consecutive order and input said data to said printer means for printing a series of portions of a curve representative of the analog signal from said at least one sensor, said printer means being adapted to advance said print medium after printing each said curve portion, a cardiogram of said predetermined duration of said selectively sensed at least one analog signal being produced on said print medium extending in the direction of advance of said print medium, said processor means inputting said data to said printer during the time that data is written into said memory means but at a rate slower than the rate said data is written into said memory means.

4,483,347

METHOD AND APPARATUS FOR DISPLAYING ELECTROCARDIOGRAPHIC SIGNALS

Alan S. Wong, Escondido, Calif., assignor to Del Mar Avionics, Irvine, Calif.

Filed Mar. 10, 1982, Ser. No. 356,326
Int. Cl.[3] A61B 5/04
U.S. Cl. 128—712 **10 Claims**



1. An improvement in a system for processing predetermined physiological signals in combination with an oscilloscope display and a fixed medium, said improvement comprising:

means for defining a first, second and third interval;

means for displaying said signals in one of a plurality of display formats during said first time interval on said oscilloscope display when said signals are read from said fixed medium, said signals being displayed in said oscilloscope display from said fixed medium at a rate greater than the rate at which said signals occurred in real time;

means for annotating said signals with a predetermined parameter according to said one of said plurality of display formats during said second time interval subsequent to said first time interval; and

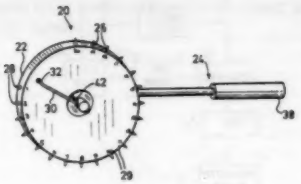
means for marking said signals in said one format to identify a plurality of detected physiological events corresponding to portions of said signals during said third time interval subsequent to said first time interval, each of said means being mutually coupled to coordinate displaying, annotating and marking in said one display format,

whereby an annotated and marked display of physiological signals corresponding to a long period of time can be displayed, analyzed and marked in a substantially shorter period of time by a system of minimal complexity.

4,483,348
SKIN TESTING DEVICE

Nathan Sher, 11 Caldy Ct., Willowdale, Ontario, Canada M2L 2J5

Filed Mar. 25, 1982, Ser. No. 361,367
Int. Cl.³ A61B 10/00
U.S. Cl. 128—743 22 Claims



1. A device for effecting multiple scarifications on spaced apart portions of a body comprising:

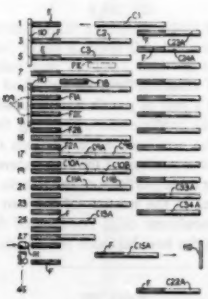
a self-supporting body having a convexly curved rolling surface and a plurality of scarifiers extending outwardly of said rolling surface, in spaced apart relationship, said scarifiers having outer scarifying ends,

said rolling surface being adapted to be rolled on a body portion for sequential penetration of the epidermis at spaced apart cutaneous sites, by said scarifying ends.

4,483,349
FILTER CIGARETTE MAKING MACHINE

Derek H. Dyett, and John K. Horsley, both of High Wycombe, England, assignors to Molins Limited, London, England

Filed Feb. 25, 1981, Ser. No. 238,038
Claims priority, application United Kingdom, Feb. 26, 1980, 8006365
Int. Cl.³ A24C 5/47
U.S. Cl. 131—94 14 Claims

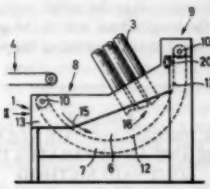


14. In a filter attachment machine, a first fluted drum arranged to receive double cigarettes in the flutes thereof, means for cutting each double cigarette through the middle to produce two separate cigarette portions, means for effecting separate transfer of the two portions of each double cigarette from the first fluted drum during successive revolutions of the drum, a second fluted drum which is arranged to receive from each flute of the first drum one portion of each double cigarette together with a portion of the double cigarette received by the said flute of the first drum during the previous revolution of the drum, and including means for axially displacing along the first drum the portion of each double cigarette which is left on the first drum after the other portion of the same double cigarette has been transferred to the second drum, whereby the ends of the cigarette portions formed by the said cutting means will be directed away from each other on said second drum.

4,483,350
DEVICE FOR CHARGING CIGARETTE MACHINES WITH TOBACCO

Alfred Rüffer; Johannes Haas, and Karl W. Quester, all of Cologne, Fed. Rep. of Germany, assignors to Firma Wilh. Quester, Fed. Rep. of Germany

Filed Jun. 28, 1982, Ser. No. 392,588
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1981, 3125427
Int. Cl.³ A24C 5/39
U.S. Cl. 131—108 17 Claims

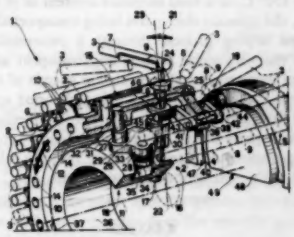


1. A device for charging cigarette machines with tobacco comprising means for establishing a collection area in the form of a trough-shaped configuration including a bottom defined by a conveyor, means for imparting motion to said conveyor in a predetermined direction, a plurality of suction tubes having terminal end portions thereof disposed within said collection area and adjacent said conveyor whereby tobacco upon said conveyor is circulated thereby and withdrawn therefrom by said suction tubes, said conveyor includes an inlet end portion and an outlet end portion as viewed in the direction of conveyor motion, and said suction tube terminal end portions are positioned generally between said inlet and outlet portions.

4,483,351
TURNAROUND DEVICE FOR ROD-LIKE ARTICLES, IN PARTICULAR CIGARETTES

Enzo Seragnoli, Bologna, Italy, assignor to G. D. Societa per Azioni, Bologna, Italy

Filed Aug. 6, 1982, Ser. No. 406,032
Claims priority, application Italy, Sep. 29, 1981, 49393 A/81
Int. Cl.³ A24C 5/35
U.S. Cl. 131—282 6 Claims



1. A turnaround device for rod-like articles, in particular cigarettes, comprising a conveyor device (10) operable to advance the said articles in a direction transverse their axes, and a plurality of supports (6, 7) connected to the conveyor device (10) and aligned along first and second rows (4, 5) which are parallel to one another, the supports (6, 7) being spaced with a constant and equal pitch along both said rows (4, 5) and each support (6, 7) being able to house a respective

rod-like article (2, 3), characterised by the fact that each support (6) of the first row (4) is fixed with respect to the conveyor device (10), whilst each support (7) of the second row (5) is connected to the conveyor device (10) by means of an associated turnaround unit (16); each turnaround unit (16) comprising first actuator means (19) operable to impart to the associated support (7) a reciprocating translational movement in a direction of translation substantially transverse to both a longitudinal axis of the support itself and to the direction of advance, and second actuator means (18) operable to impart to the associated support (7) a rotation through 180° starting from an initial position of juxtaposition with a corresponding support (6) of the first row (4) and about an axis of rotation (21) substantially parallel to the direction of the said translation, located at the end of the associated article (3) facing the support (6) of the first row (4) in the initial position, and displaced with respect to the longitudinal axis of the associated support (7) by a distance equal to one quarter of the pitch or spacing of the supports (6, 7).

4,483,352

METHOD OF INCREASING THE VOLUME OF CUT TOBACCO RIBS AND AN APPARATUS FOR CARRYING OUT SAID METHOD

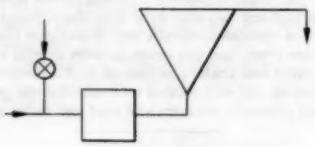
Laszlo Egri, Basel, Switzerland, assignor to Tamag Basel AG, Birsfelden, Switzerland

Filed Oct. 2, 1981, Ser. No. 307,800

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1980, 3037885

Int. Cl.³ A24B *3/18*

U.S. Cl. 131—296 **22 Claims**



1. A method of increasing the volume of cut tobacco stems comprising impregnating the tobacco stems to a water content of at least 45% by weight with an impregnating agent containing at least water, expanding the impregnated tobacco stem parts in an expansion zone with a gaseous heating and transport medium containing steam and having a temperature of from about 105° C. to about 250° C., and drying the expanded tobacco stem parts in a drying zone at a temperature of about 110° C. to 150° C. to a final moisture content of at least 12.5% by weight, the tobacco stem parts being transported during the heating and drying process through a pneumatic transport system by the very same heating and transport medium, the direction of movement and the relative speeds of the tobacco stem parts in the expansion zone being changed several times relative to the gaseous heating and transport medium, and the tobacco stem parts in the drying zone being subjected to a lower temperature and a reduced flow velocity relative to the conditions at the end of the expansion zone.

4,483,353

TOBACCO PROCESSING

Terence G. Mitchell, Hampshire, England, assignor to British-American Tobacco Company Limited, London, England

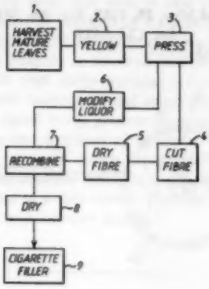
Filed Jul. 19, 1982, Ser. No. 399,227

Claims priority, application United Kingdom, Jul. 24, 1981, 8122815

Int. Cl.³ A24B *15/20, 15/24*

U.S. Cl. 131—297 **15 Claims**

1. A tobacco-treatment process, wherein cell-sap is mechanically expressed from yellowed, substantially undried, tobacco-leaf material, fibrous material remaining after the expression is impregnated with at least a part of cell-sap expressed from



yellowed, substantially undried, tobacco-leaf material, and the sap-impregnated leaf material is dried.

4,483,354

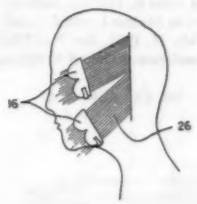
METHOD OF COLORING HAIR

Bernadine A. Marcotte, 10515 Prouty Rd., Painesville, Ohio 44077

Continuation-in-part of Ser. No. 418,754, Sep. 16, 1982, Pat. No. 4,414,991. This application Sep. 27, 1983, Ser. No. 536,199

Int. Cl.³ A45D *24/36*

U.S. Cl. 132—45 R **8 Claims**



1. A method of coloring hair, said method comprising the steps of providing a pair of panels having nonlinear edge portions with the same configuration, gripping the hair between the panels with the nonlinear edge portions of the panels in alignment and with a portion of the hair extending outwardly from the nonlinear edge portions of the panels, and applying a hair coloring agent to the portion of the hair extending outwardly from the nonlinear edge portions of the panels while continuing to grip the hair between the panels.

4,483,355

VANITY CASE

Yukitomo Yuhara, Abiko, Japan, assignor to Yoshida Industry Co., Ltd., Tokyo, Japan

Filed May 5, 1983, Ser. No. 492,002

Claims priority, application Japan, Oct. 25, 1982, 57-160273[U]; Nov. 9, 1982, 57-168639[U]

Int. Cl.³ A45D *33/00*

U.S. Cl. 132—83 R **7 Claims**

1. A vanity case comprising:

a receptacle member having a concave portion for containing cosmetic material therein and having a recess at a rear end thereof;

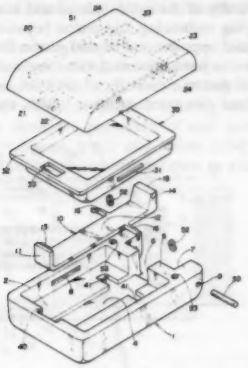
a cover member having a hinge block at a rear end thereof;

said receptacle member and said cover member being hinged together by fitting said hinge block into said recess;

a means for urging said cover member to an open position with respect to said receptacle member;

a slide element slidably disposed in said concave portion, said slide element having a nose and a rear extension, said nose extending upwardly from the front end of said slide element and being provided at the inner top end thereof with a first hook portion, and said rear extension extending into said recess without contacting said hinge block;

a second hook portion formed on the lower surface of said cover member;



said cover member being maintained in a closed position with respect to said receptacle member by an engagement between said first and second hook portions, said engagement being released by a forward movement of said first hook portion when said slide element is pushed forwardly, whereby said cover member is opened by said means for urging said cover member; and

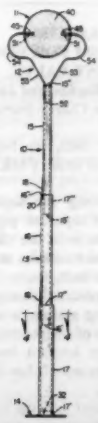
a means for holding said slide element in the rearmost position.

4,483,356

HAND-HELD LOTION APPLICATOR

Donna R. Kales, 14204 E. First Dr., Aurora, Colo. 80011

Filed Aug. 11, 1982, Ser. No. 407,266
Int. Cl.³ A45D *40/26*
U.S. Cl. 132—88.7 **8 Claims**



1. A hand-held applicator adaptable for self-applying a cosmetic fluid medium to the human body, comprising in combination:

a handle portion movable between an extended and retracted position having a plurality of telescoping length-adjustable members including an uppermost member provided with a pad support-receiving upper recessed end, said length-adjustable members define by a plurality of telescoping tubular members of triangular cross-sectional configuration, said tubular members dimensioned to fit in nesting relationship to one another to permit retraction of said handle portion into said retracted position, and said tubular members further being extendible from said retracted position to said extended position having a length greater than the length of said handle portion in said retracted position;

a substantially flat, disk-shaped pad having at least one outwardly facing fluid-receiving surface with an outer peripheral edge; and

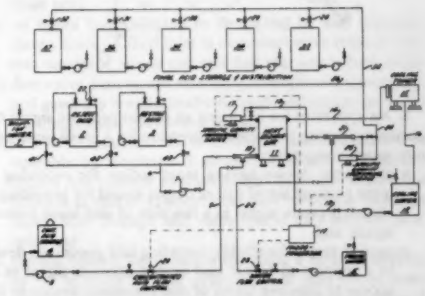
a pad support bale seated in said upper receiving end of said uppermost length-adjustable member having a pair of bendable arms and swivel connecting means for swiveled connection of said arms to said outer peripheral edge of said pad, said bendable arms having a common end axially inserted a measured distance into said receiving end of said uppermost length-adjustable member of said handle portion and having two free ends bent away from the vertical axis of said handle portion, then angled forwardly and curved toward one another, said arms terminating a spaced distance from each other, said distance being slightly less than the diameter of said disk-shaped pad.

4,483,357

METHOD FOR TWO STAGE IN-LINE ACID MIXING

Jagdish J. Rao, Brown Deer, and James K. Jeglum, Janesville, both of Wis., assignors to Globe-Union Inc., Milwaukee, Wis.

Filed Feb. 22, 1983, Ser. No. 468,325
Int. Cl.³ G05D *11/06*
U.S. Cl. 137—3 **10 Claims**



1. The method of preparing mixtures of acid and water of varying desired final specific gravities in two continuous in-line stages comprising the steps of:

a. mixing a first flow of water or dilute acid and a flow of concentrated acid to provide a first stage mixture;

b. establishing a set point specific gravity for the first stage mixture which is greater than the specific gravity of the desired final mixture;

c. continuously measuring the actual specific gravity of the first stage mixture;

d. utilizing a programmed microprocessor to calculate the deviation between the measured specific gravity of the first stage mixture and the set point specific gravity;

e. generating a first control signal based on the calculated deviation;

f. utilizing the first control signal to adjust the flow of one component of the first stage mixture to establish parity

between the measured specific gravity of the first stage mixture and the set point specific gravity;

g. selecting a specific gravity for a desired final mixture;

h. mixing a flow of the first stage mixture at the set point specific gravity and a second flow of water to provide a second stage mixture;

i. continuously measuring the actual specific gravity of the second stage mixture;

j. utilizing the microprocessor to calculate the deviation between the measured specific gravity of the second stage mixture and the specific gravity of the desired final mixture;

k. generating a second control signal based on the calculated deviation from the preceding step;

l. utilizing the second control signal to adjust the second flow of water to establish parity between the measured specific gravity of the second stage mixture and the specific gravity of the desired final mixture; and

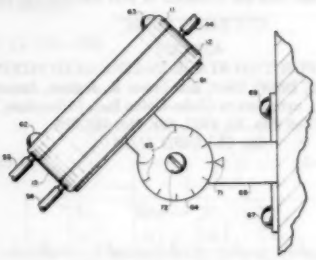
m. directing the flow of the second stage mixture at the final specific gravity to a reservoir.

4,483,358

ADJUSTABLY TILTABLE PNEUMATIC DEVICE

Richard C. Mott, Harwood Heights, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 4, 1980, Ser. No. 175,156
Int. Cl.³ G05D *16/00*
U.S. Cl. 137—39 **21 Claims**



1. An apparatus for adjusting an output pressure signal of a pneumatic device to a selected pressure for a given input pressure signal comprising:

a pneumatic device having input means for receiving an input pressure signal and an output means for providing an output pressure signal as a function of said input pressure signal; and,

mounting means for tiltably mounting said pneumatic device to a support to adjust said output pressure signal in response to selective tilting of said pneumatic device so that a given output pressure signal can be selected for a given input pressure signal.

4,483,359

PULL AWAY SPILL GUARD

Harry G. Robertson, Blue Island, Ill., assignor to Railhead Corp., Evergreen Park, Ill.

Filed Sep. 27, 1982, Ser. No. 424,068
Int. Cl.³ F16K *13/04*
U.S. Cl. 137—68 R **1 Claim**

1. A pull away spill guard incorporated in a liquid transferring system comprising;

(a) a two piece circular housing including an inlet case and an outlet case having a diameter less than said inlet case so as to have a portion thereof insertable therein,

(b) an annular flange on the periphery of said outlet case having a diameter equal to that of said inlet case and providing a confronting annular surface limiting the insertion into said inlet case,

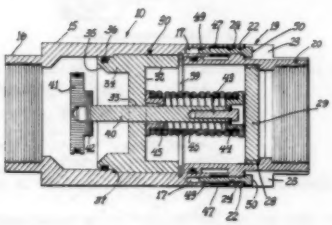
(c) a circular valve block within said inlet case providing a valve seat,

(d) means retaining said valve block within said inlet case intermediate its ends without restricting the flow of said liquid through said case,

(e) a valve member including a valve head mounted on one end of a valve piston, with said piston freely journalled through said valve block and being of a length to position said head within said inlet case and with its opposite end outwardly of the outlet side of said inlet case,

(f) a spring embracing said piston between said valve block and said opposite end of said piston for normally seating said valve head upon said valve seat and said opposite end of said piston outwardly of the inlet case,

(g) a fixed elongated member within said outlet case and



extending diametrally thereto and movable therewith when said outlet case is inserted into and attached to said inlet case for releasably contacting said opposite end of said piston to move the same and said valve head axially through said valve block against the action of said spring to open said inlet case to flow of liquids therethrough when said outlet case is inserted in and connected to said inlet case,

(h) external breakaway means extending coaxially of the center line of the said housing comprising threaded pins having deformed shank portions with the pins journalled through said peripheral annular flange of said outlet case and into helicoils contained in aligned openings formed in the annular confronting surface provided by said inlet case for releaseably connecting said outlet case to said inlet case with said valve head displaced from said valve seat during the absence of a pre-determined linear force upon either case in either direction.

4,483,360

ACTUATOR MECHANISM FOR DOUBLE-BLOCK AND VENT VALVE

Herman E. Knappe, Cedar Rapids, and James W. Scott, Marion, both of Iowa, assignors to Cherry-Burrell Corporation, Cedar Rapids, Iowa

Filed Mar. 10, 1983, Ser. No. 473,988
Int. Cl.³ B08B *9/02*; F16K *31/122*
U.S. Cl. 137—240 **13 Claims**

1. In a valve for allowing the separate flow of liquids through two lines of two separate piping systems without intermixing when the valve is in the closed position and for permitting flow between the two lines when the valve is in the open position, which valve includes

a housing which has a first conduit region for connection to a line of the first piping system, a second conduit region for connection to a line of the second piping system and an interconnecting region located between said first and second conduit regions which has first and second valve seats provided therein,

a composite valve member having upper and lower parts disposed within said interconnecting region of said housing,

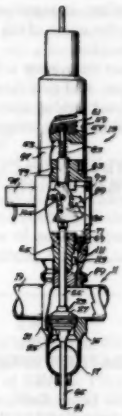
a rod member extending upward from said lower part and through the upper end of said housing,

a hollow tube member coaxial with said rod member that extends upward from said upper valve member part through the upper end of said housing,

said upper and lower valve member parts being relatively movable and being proportioned to seal against said first and second valve seats,

said composite valve member having a passageway extending from an exterior location to an intermediate chamber which is defined between said relatively movable valve member parts,

said upper and lower valve parts being vertically spaced apart from each other so that the periphery of said chamber is open when both are in contact with said respective valve seats and being movable into abutting contact with each other to close the periphery of said intermediate chamber therebetween when said lower valve member part is lifted a sufficient vertical distance to also lift said



upper valve member part from its seat and thereby open communication between said two piping systems,

actuator means disposed exterior of said housing for individually lifting either of said valve member parts and including first means for lifting said rod member connected to said lower valve member part and second means for lifting said tube member connected to said upper part,

the improvement which comprises

mechanical means for normally and positively blocking the upward movement of said tube member so as to prevent the lifting of said upper part from its seat and

means for moving said blocking means from its normal blocking location whenever it is desired to individually lift said upper part or to lift both said lower and upper valve member parts,

whereby said upper part is positively seated upon its valve seat and blocked against movement through said mechanical means when only said lower part is lifted and cleaning-in-place of said respective valve seat of the lower part is taking place by the flow of cleaning solution therepast.

4,483,361

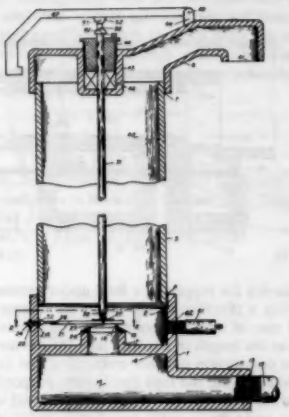
ANTI-SYPHON FROST-PROOF HYDRANT

Edward J. Jungbert, Sr., 12900 North Osage Rd., Louisville, Ky. 40223

Continuation-in-part of Ser. No. 971,329, Dec. 20, 1978, abandoned. This application Nov. 14, 1980, Ser. No. 206,723

Int. Cl.³ E03B 9/14

U.S. Cl. 137—301 **5 Claims**



1. An anti-syphon frost proof hydrant including:

a. a lower body having a fluid inlet adapted to be connected in communicative relation to a source of liquid, a fluid outlet defined by a first valve seat drain port;

b. standpipe means connected to said lower body in communicative relation with said first valve seat and anti-syphon drain port;

c. an upper body adapted to be carried by said standpipe means having a fluid inlet in communicative relation with said standpipe means and said first seat and a fluid outlet;

d. first valve stem means extending through said upper body and generally longitudinally through said standpipe means for longitudinal movement therein;

e. first valve means carried at the end of said stem means and operable by longitudinal movement of said stem means from a first position to seat on said valve seat to a second position in spaced relation from said valve seat to permit liquid flow through said valve seat at first selected pressure; and

f. syphon control valve means including a housing adapted to be received in said drain port of said lower body wherein said housing has an inlet in communication with said standpipe and an outlet, first housing valve means adapted to open and close said inlet housing; biasing means to normally urge said first housing valve means to a closed position in response to a first level of liquid in said standpipe and to permit said first housing valve means to open when the liquid level in said standpipe exceeds said first level to selectively permit flow of liquid into said housing; second housing valve means adapted to open and close said outlet of said housing including bias means to urge said second housing valve means to open said outlet until liquid pressure in said standpipe is equal to the pressure exerted by said liquid when said standpipe is full of liquid at static conditions, and to urge said second housing valve to open said outlet when the pressure exerted by said liquid in said standpipe is less than the pressure exerted by said liquid in said standpipe when said standpipe is less than liquid full at static conditions.

4,483,362

DEVICE FOR SUPPLYING MOVABLE USERS WITH A PRESSURE FLUID

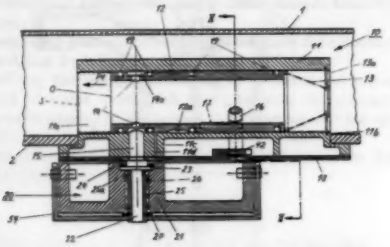
Rolf W. Luginbühl, Florastrasse 5, Küsnacht 8700, Switzerland

Filed Apr. 30, 1982, Ser. No. 373,513

Claims priority, application European Pat. Off., Mar. 19, 1982, 82102241.5

Int. Cl.³ F16L *29/00, 37/28*

U.S. Cl. 137—322 **10 Claims**



1. A device for supplying a fluid under pressure from a feed line having a plurality of tap points to at least one user at a selected one of said tap points, the tap points being spaced apart over the length of the feed line, the device comprising at least one connection unit for connecting the user to the feed line movable along the feed line for the purpose of selecting a tap point, at least one tap valve at one of said tap points, said tap valve including a valve member movable along said feed line between open and closed positions to control communication of fluid between said feed line and said connection unit, means for moving said valve member along the feed line between said closed and open positions in response to movement of said connection unit along said feed line into a connecting position corresponding to said one tap point, sealing means between said connection unit and said tap valve for providing a seal therebetween in response to opening of said tap valve, said valve member comprising a tubular valve member being disposed within said feed line and parallel thereto and having opposite end faces exposed in any operating position to one and the same fluid pressure and thus being substantially free of fluid pressure forces which might tend to bias said valve member into a closed position, said tubular valve member having an opening through the wall of said tubular valve member intermediate said end faces of said valve member for communicating fluid from said feed line to said connection unit when said valve member is in said open position.

4,483,363

COMPRESSOR VALVE

Robert D. Madoche, Box 916, Devon, Alta., Canada T0C 1E0; Dan C. Madoche, 34 Winchester Ave., Spruce Grove, Alta., Canada T0E 2C0; Neil O. Lepps, 51028 Range Rd., 221 Sherwood Park, Alta., Canada T8E 1G8, and Dwayne R. Zukowski, R.R. 1, Leduc, Alberta, Canada T9E 2X1

Filed Sep. 21, 1983, Ser. No. 534,247

Int. Cl.³ F16K *15/08*

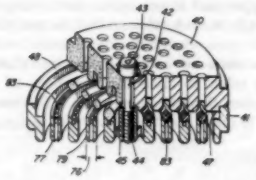
U.S. Cl. 137—329.04 **10 Claims**

1. A compressor valve comprising a valve seat and a valve guard, said valve seat and valve guard being fixedly secured to each other and defining therebeteween a valve chamber, said valve chamber having valve means disposed therein and arranged to allow, in a first position thereof, passage of gaseous medium through the valve in a first direction, said first direction being oriented from the seat to the guard, and to prevent passage of the gaseous medium through said valve in a second direction opposite to the first direction, by sealingly engaging respective annular porting groove means in that surface of the valve seat which faces the chamber, wherein

(a) the surface of said valve guard facing said chamber includes annular support means protruding into the chamber and disposed co-axially with the respective groove means, said support means being adapted to freely support thereon the respective valve means in a first position relative to the respective groove means, such that the respective valve means is maintained in register with the respective groove means and allows free passage of gaseous medium in the said first direction;

(b) said valve guard forms passage means disposed to each side of the respective valve means;

(c) said passage means in the valve guard said support means and said valve means are so arranged and disposed as to



cause displacement of the valve means from said first position into sealing engagement with the respective groove means by the action of the predetermined gas flow in the second direction;

(d) said valve means comprises a first face section and a second face section, said first face section being a mirror image of said second face section and facing said porting groove means and being convergent in said second direction; and

(e) said valve means is a valve ring, said passage means being disposed to each radial side of the respective valve means.

4,483,364

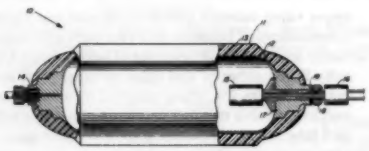
HEATER FOR ULTRA HIGH PRESSURE COMPRESSED GAS

Steven E. Ayler, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 26, 1982, Ser. No. 362,354

Int. Cl.³ F16K *49/00*; F16D *31/02*

U.S. Cl. 137—334 **8 Claims**



1. A compressed gas power supply comprising:

an ultra high pressure vessel having first and second end walls;

discharging means for channeling the discharge of compressed gas from said pressure vessel mounted at said first end wall comprising a fill/output boss;

controlling means for regulating the flow of compressed gas connected to said discharging means;

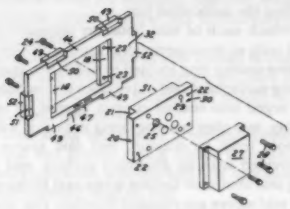
a pyrotechnic heater mounted at said second end wall; and

means for initiating said heater mounted at said second end wall.

4,483,365
INTERLOCKING MODULAR VALVE MOUNTING ASSEMBLY

Gerald J. Fallon, Southfield, Mich., assignor to Louis G. Basso, Jr., West Bloomfield, Mich.

Filed Jul. 27, 1982, Ser. No. 402,457
Int. Cl.[3] F16L *3/00*; F16K *1/00*
U.S. Cl. 137—343 10 Claims



1. A valve mounting assembly comprising a plurality of panels interfit together to be self-supporting wherein each panel further comprises:

a body having opposing front and back planar sides;

edge portions formed about the periphery, defining a top, a bottom, a first end, and a second end;

said front planar side being adapted to receive a valve, said back planar side being adapted to receive piping means;

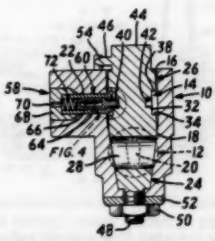
said panel having a plurality of holes extending therethrough for connecting the piping means in fluid flow relationship with the valves; and

a plurality of peripherial flanges extending outwardly from each of said top, bottom, first end, and second end of said edge portions and defining a plurality of pockets wherein said flanges and said pockets of the panel interfit with pockets and flanges of adjacent panels respectively located at the top, bottom, first end and/or second end of said panel.

4,483,366
LOCKING VALVE

Leonard Labita, 364 Demorest Ave., Staten Island, N.Y. 10314

Continuation-in-part of Ser. No. 174,157, Jul. 31, 1980, abandoned. This application Apr. 21, 1982, Ser. No. 370,476
Int. Cl.[3] F16K *35/06*
U.S. Cl. 137—385 12 Claims



4. A locking valve comprising:

(a) a housing defining a passageway, a stem bore open to the outside of the housing at one end and a lock bore intersecting said stem bore;

(b) an elongated stem having a narrow portion, a wide portion and a circumferential shoulder at the juncture of said wide and narrow portions, said stem having at least one bore in its narrow portion, said bore being counterbored and being capable of being aligned with said lock bore, said stem being rotatably disposed in said stem bore so that said narrow portion confronts said lock bore and said shoulder faces towards the open end of the stem bore;

(c) a valve element mounted to said housing for movement between a first closed position in which the valve element occludes said passageway and an open position in which the valve element does not occlude said passageway, said valve element being connected to said stem for movement in conjunction with rotation of said stem;

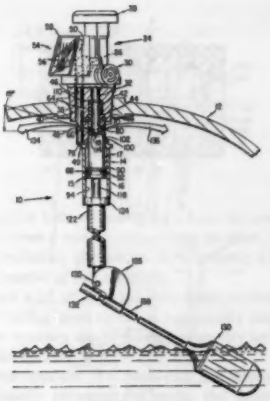
(d) a lock pin slidably mounted in said lock bore; and

(e) means for biasing said lock pin towards said narrow portion of said stem so that said lock pin will bear on the surface of said narrow portion and will enter the counterbore of said bore when said bore approaches alignment with said lock bore and will enter said bore when said bore is aligned with said lock bore.

4,483,367
STOP FILL VALVE

Herbert G. Ross, Jr., Carrollton, and Robert E. Hrncir, Dallas, both of Tex., assignors to Rochester Gauges, Inc., Dallas, Tex.

Filed Jan. 20, 1984, Ser. No. 572,408
Int. Cl.[3] F16K *31/20*, *37/00*, *33/00*
U.S. Cl. 137—416 15 Claims



1. A stop fill valve for stopping the flow of a fluid into a tank when the fluid in the tank reaches a predetermined level, comprising:

a cylindrical body mounted to said tank at an opening therein and extending into the interior of said tank, said body having an axial bore extending partially along the length of said body for receiving fluid from said opening, said body having at least one port extending through the side thereof and in fluid communication with said bore for delivering said fluid from said bore into said tank, said body further having a shoulder opposite said opening from said port;

a cylinder slidably mounted on the exterior of said cylindrical body over said shoulder to form an annular space between said cylinder and said body, said cylinder having a lip at one end thereof for contacting the exterior of said body for closing said annular space, wherein said cylinder is driven by the pressure of said fluid to enclose said port and stop the flow of said fluid into said tank when said annular space is open to receive said pressurized fluid from said port;

a shaft connected to and extending downward from said body;

a pivot mounted on said shaft offset from said body;

a lift member slidably mounted on said shaft for lifting said cylinder toward said cylindrical body, said lift member is disconnected from said cylinder and elevated above said

lift member when said cylinder is driven by said pressurized fluid;

a cam mounted to said pivot;

a float assembly mounted to said cam wherein movement of said float assembly about said pivot toward said body causes said cam to drive said lift member toward said body which in turn lifts said cylinder to open said annular space to said port when said fluid in said tank has reached said predetermined level wherein said float assembly is not lifted by said cylinder when said cylinder is driven by said pressurized fluid.

4,483,368

PLUG CONNECTION FOR AQUARIUM PRESSURE MEDIUM CONDUITS

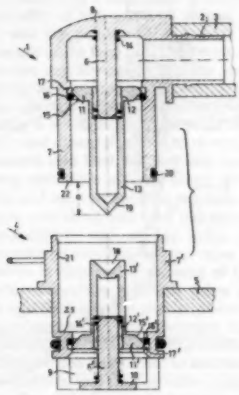
Rudolf Pantböfer, St. Augustin, Fed. Rep. of Germany, assignor to Tetra Werke Dr. rer. nat. Ulrich Baensch GmbH, Melle, Fed. Rep. of Germany

Continuation of Ser. No. 252,445, Apr. 9, 1981, abandoned. This application Jul. 27, 1983, Ser. No. 518,462

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1980, 3014527

Int. Cl.³ F16L *37/28*

U.S. Cl. 137—614.04 **1 Claim**



1. A plug connection for pressure medium conduits of aquariums particularly in connection with aquarium filter devices including external filter connections, comprising in combination:

a plug connectible to a conduit and including a first housing;

a sleeve, for receiving said plug, and also connectible to a conduit and including a further housing;

a respective valve disc located within each of said housings of said plug and of said sleeve respectively for blocking said conduits thereof, said valve discs each being respectively provided with sealing surfaces as valve seats, and with axially displaceable shafts, said shafts of said valve discs being so dimensioned that, when said housings of said plug and said sleeve respectively are plugged together, said shafts abut one another prior to the lifting of said sealing surfaces of said valve discs from the associated first and further housings; and

respective valve springs in each of said first and further housings respectively for urging said sealing surfaces of the associated valve discs into sealing contact with the associated housing respectively, said sealing surfaces being lifted from the associated first and further housings respectively only after a time, when said housings of said plug and said sleeve are plugged together, so as to form a pressure-tight conduit between said valve discs for communication with said conduits of said plug and said sleeve, the closing of valve discs urged by said valve springs respectively taking place before separation of said plug and said sleeve is completed when said plug is pulled out for releasing the connection for instance for the purpose of cleaning the filter device, each of said housings being provided with an inner pin, and each of said valve discs and its shaft being provided with a central bore, said pins extending toward said valve discs and projecting into the associated central bore in such a way that the valve discs and shafts are longitudinally guided, said valve springs surrounding the associated pins

further in which each of said housings respectively also is provided with an inner peripheral groove; which includes a respective sealing ring located in said inner grooves; and said sealing surfaces of said valve discs are inclined seating surfaces urged into sealing contact against an associated sealing ring, said plug housing being provided with an end face remote from its conduit, and said sleeve housing being provided with an abutment surface, said end face engaging said abutment surface when said housings of said plug and said sleeve are plugged together, that part of said housing of said plug surrounding the associated shaft and remote from its conduit being provided with a seal, and that part of said housing of said sleeve surrounding the associated shaft being provided with a bore corresponding in shape to said plug housing and being provided with an inner surface adapted to sealingly engage said seal when said housings of said plug and said sleeve respectively are plugged together, said plug being an elbow type plug, and the conduit of said sleeve being part of the wall of a filter housing and being provided with a bore for receiving said sleeve, those ends of said shafts adapted to abut one another also having a fit positively joined into one another, one of said shafts having an essentially conical recess, and said other shaft having a correspondingly shaped conical end complementary to the conical recess.

4,483,369

LINEAR MOTOR-ACTUATED FLOW CONTROL VALVE

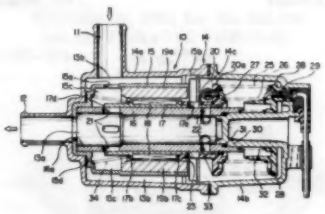
Motonobu Akagi, Kariya; Yasuhiro Kawabata, Anjo, and Kyo Hattori, Susono, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya and Toyota Jidoshakogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed May 3, 1982, Ser. No. 374,347

Claims priority, application Japan, May 2, 1981, 56-67347

Int. Cl.³ F16K *31/08, 11/07*

U.S. Cl. 137—625.12 **12 Claims**



1. A linear motor-actuated flow control valve which comprises:

a casing having an inlet port and an outlet port,

a moving-coil linear motor disposed within said casing and including:

a hollow, ferromagnetic core which delimits the interior of said casing into valve chambers, said core having first and second hole means, said first and second hole means each arranged to communicate said inlet port with said outlet port, said first and second hole means being spaced apart longitudinally,

a bobbin longitudinally slidably disposed on said core for

controlling the degree of opening of said first and second hole means, said bobbin arranged to begin opening said second hole means when said first hole means is partially opened,

an electromagnetic coil wound on said bobbin,

a permanent magnet arranged so that a magnetic flux produced thereby extends axially of said electromagetic coil, and

a magnetic body for forming, together with said core, a magnetic circuit for the flux produced by said permanent magnet,

first spring means for biasing said bobbin in one longitudinal direction and defining electric supply lines to said coil,

second spring means for biasing said bobbin in the opposite longitudinal direction,

said bobbin being retained at a predetermined position by said first and second spring means when said coil is in a de-energized state, wherein said first hole means is open to a predetermined degree, and

said bobbin driven selectively against the biasing force of said first and second spring means in response to the application of a positive or negative energizing current to said coil to regulate the flow between said inlet and outlet ports.

4,483,370

RESTRICTOR COLLAR FOR INSTALLATION IN THE LEAKAGE WATER DISCHARGE PIPES OF TURBINES AND PUMPS

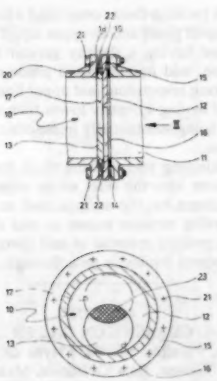
Johann Talasz, Heidenheim, Fed. Rep. of Germany, assignor to J. M. Voith, GmbH, Heidenheim, Fed. Rep. of Germany

Filed Jan. 31, 1983, Ser. No. 462,389

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1982, 3204937

Int. Cl.³ F15D *1/00*

U.S. Cl. 138—45 **1 Claim**



1. In an adjustable restrictor collar for installation in a separation point of leakage water discharge pipe of Francis and pump turbines as well as pumps, with two coaxially arranged disks, each having one eccentrically disposed opening therein, one of said disks being fixed against movement and the other said disk being substantially circular, the improvement comprising:

said two disks having their mutually facing planar surfaces in abutment against each other, and being securable against rotation relative to each other between two adjustably securable flange members at said separation point of said discharge pipe, said one disk and said flange member adjacent said other disk being spaced-apart to expose portions of the circumferential surface of said other disks, said openings being substantially circular in shape and at least partially overlapping one with the other, and

said other disk having a plurality of radially disposed holes in said portions of said circumferential surface, said other disk being rotatable relative to said one disk when said flange members are adjustably loosened, whereby said other disk is adapted to be rotated by inserting an adjustment tool in one of said holes when said flange members are adjustably loosened, and then secured against rotation when said flange members are resecured.

4,483,371

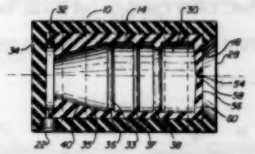
PROTECTIVE HOLDER FOR HOSE TIP ASSEMBLY

Victor G. Susin, 9S252 Naper Blvd., Naperville, Ill. 60565

Filed Jul. 22, 1983, Ser. No. 516,317

Int. Cl.³ F16L *55/24, 57/00*

U.S. Cl. 138—89.4 **10 Claims**



1. A protective holder for storing a hose tip assembly when disconnected from a mating connecting member, comprising

a housing including interior surfaces defining a hollow interior for receiving the assembly,

an entry end with an opening permitting access to the interior and with a dust shield in a normally closed position over the opening but moveable inwardly by insertion of the assembly, and

a closed end opposite the entry end, the interior extending longitudinally between the ends, the interior surfaces forming resilient stop means limiting insertion of the assembly to a stop position, a first chamber between the stop means and closed end, and a second chamber exposing a plurality of resilient gripping surfaces between the stop means and entry end for releaseably gripping the assembly in the stop position.

4,483,372

TENSIONING APPARATUS FOR A WHIP ROLL OF A WEAVING MACHINE

Hans Demuth, Winterthur, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur

Filed Apr. 28, 1983, Ser. No. 489,390

Claims priority, application Switzerland, Apr. 29, 1982, 2605/82

Int. Cl.³ D03D *49/22*

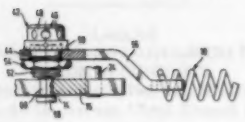
U.S. Cl. 139—114 **16 Claims**

1. In a weaving machine, the combination comprising

a pair of pivotally mounted tensioning levers, each said lever having a pair of arms;

a whip roll mounted at opposite ends on one arm of each said lever;

a force storage means connected to the other arm of one of said levers for biasing each said lever; and



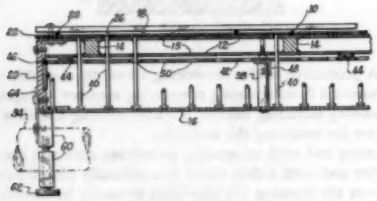
an adjustable eccentric element fixedly connected to said respective force storage means for adjusting the force exerted on said one lever by said force storage means.

4,483,373

UNIVERSAL WIRING HARNESS FORMBOARD

John W. Tarbox, 13096 Caminito Del Rocio, Del Mar, Calif. 92014

Filed Feb. 28, 1983, Ser. No. 470,275
Int. Cl.³ B21F *21/00*
U.S. Cl. 140—92.1 **19 Claims**



1. A universal formboard for making harnesses comprising:
(a) a frame defining a work surface and a plurality of spaced pin stations;
(b) each of said stations having a pin movable between a retracted mode out of the way and an erect mode extended from said work surface;
(c) a pattern positionable to physically block all of said pins and prevent same from moving from said retraction mode to said erect mode except for selected pins defining a pre-selected erect pin pattern;
(d) means for applying a force against all of said pins to bias said pre-selected pins into the erect mode while said pins which are not pre-selected are blocked by said pattern; and,
(e) locking means for securing said pre-selected pins in said erect mode after applying said force, so said force can be released and said selected pins remain in said pre-selected pattern extending from said work surface.

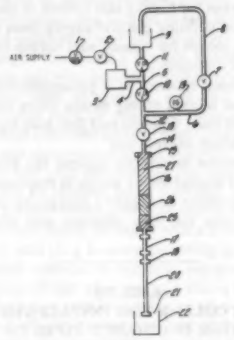
9. A method of creating a harness making formboard comprising the following steps:
(a) taking a panel having a work surface and a plurality of spaced pin stations with a pin for each station and each pin having a retracted mode and an extended erect mode and beginning in the retract mode, and so positioning a pattern element relative to said pins to block the movement of all said pins into said erect mode except selected pins to define a pre-selected erect pin pattern; and
(b) applying a force against all of said pins biasing same into the erect mode such that all pins are blocked by said pattern except the selected pins, whereby the latter form into said pre-selected erect pin pattern.

4,483,374

CHROMATOGRAPHIC COLUMN

Chester C. Siemion, Sterling Heights, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed Nov. 1, 1982, Ser. No. 438,171
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—9 **6 Claims**



1. A method for packing a high pressure liquid chromatographic column to obtain increased efficiency, said method comprising
(a) suspending a column packing material in an alcohol medium to obtain a liquid packing suspension, said alcohol having a density similar to the density of said packing material,
(b) forming a packing fluid comprising a lower liquid phase, a middle liquid phase and an upper liquid phase, said lower liquid phase having a density greater than said middle liquid phase, said middle liquid phase consisting of said liquid packing suspension, said upper liquid phase being an inert liquid having a density lower than said middle liquid phase and being substantially immiscible with said middle liquid phase,
(c) rapidly injecting said packing fluid downwardly under high pressure into the inlet of an unpacked chromatographic column having an inlet and an outlet end, said column having retainer means at said outlet end which retain said packing material in said chromatographic column and permit liquids to pass through.

4,483,375

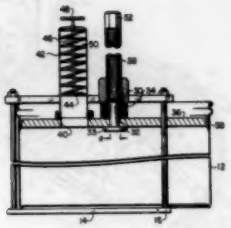
GREASE GUN FILLER

Jose L. Martin, Farallon No. 60, Playas de Tijuana, Seccion Cost de Oro, Tijuana, Baja California, Mexico

Filed May 20, 1952, Ser. No. 380,106
Int. Cl.³ B65B *6/12*
U.S. Cl. 141—27 **7 Claims**

1. An apparatus for filling a grease gun from an open top shipping container, said apparatus comprising:
a base clamp member for engaging the bottom of a container;
a top clamp member for engaging the top of a container, said top clamp having a plurality of arms extending radially outwardly from a central hub,
a barrel having a threaded cylindrical bore mounted at the central hub of said top clamp,
a plurality of clamping rods connecting said head clamp member and base clamp member for clamping a container therebetween,
a piston having a diameter substantially equal to the inside

diameter of a grease shipping container, and including a threaded filler port for receiving a grease gun barrel, seal means for sealingly engaging the walls of said container, and a vertically extending cylindrical bearing mounted on and extending upwardly from the center of said piston, and



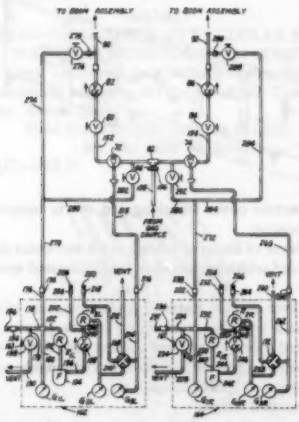
an elongated threaded shaft rotatably journaled in said cylindrical bearings and threadably mounted in said barrel and axially movable with respect to said head clamp upon rotation thereof for moving said piston against grease in a container for forcing said grease from said container via said filler port.

4,483,376

NATURAL GAS LOADING STATION

Don A. Bresie; Jack M. Burns, and Donald W. Fowler, all of 5407 N. IH 35, Austin, Tex. 78723

Filed Sep. 7, 1982, Ser. No. 415,420
Int. Cl.³ F17C 5/02
U.S. Cl. 141—95 **26 Claims**



1. A loading station for use in loading natural gas at high pressure from a source thereof into a pressure vessel, the pressure vessel being eqipped with loading manifold apparatus that includes a flow control valve and one portion of a connector device, and said loading station including:

an intake fitting arranged to be connected with said source of high pressure natural gas;

at least a pair of loading conduit arrangements, each loading conduit arrangement being connected with said intake fitting and including in series moving outwardly therefrom a pressure operated motorized control valve and a one-way check valve arranged to permit flow only in a downstream direction;

at least a pair of loading assemblies, one of said assemblies being connected with each of said loading conduit arrangements downstream of the associated one-way check valve, and each of said assemblies including a connector device portion adapted to be connected with said connector device portion of said loading manifold apparatus; and

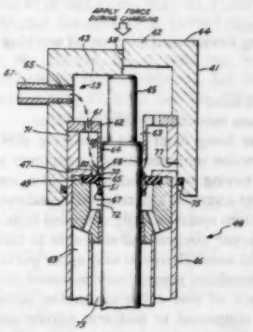
a pressure control system for operating said pressure operated motorized control valves in response to pressurized natural gas transmitted thereto, said pressure control system including a separate control box for each of said loading conduit arrangements, and each of said control boxes containing a pressure control circuit designed and arranged so that its associated motorized control valve cannot receive operating pressure sufficient to open it until the pressurized natural gas transmitted to said pressure control system reaches a pressure value above a pre-set minimum pressure.

4,483,377

METHOD AND APPARATUS FOR PRESSURIZING HYDROPNEUMATIC SHOCK ABSORBERS

Joseph Cubalchini, St. Charles, Ill., assignor to Maremont Corporation, Carol Stream, Ill.

Continuation-in-part of Ser. No. 398,707, Jul. 15, 1982, abandoned, which is a continuation-in-part of Ser. No. 389,598, Jun. 18, 1982, abandoned. This application Dec. 30, 1983, Ser. No. 567,135
Int. Cl.³ F16F 9/00
U.S. Cl. 141—349 **7 Claims**



1. Apparatus for introducing a gas under pressure to a pressurized, piston receiving device, the device having a working chamber, a cylindrical piston rod extending out from the working chamber and a lip seal preventing the pressurizing gas within the chamber from leaving the rod end portion of the chamber as the piston rod moves operably with respect to said seal and chamber, said seal having an upper portion and a lower lip portion, the apparatus comprising:

head means including a first chamber for receiving the top of the piston rod, said head means for receiving a force to apply a corresponding force to the piston rod moving the piston rod into the chamber;

gas inlet means including an opening formed in said head means and communicating with said first chamber, said gas inlet means for receiving gas under pressure into said first chamber;

seal penetrating means connected with said head means and including a bottom edge said bottom edge having gas pathway means formed therein for passing gas within said bottom edge;

a tip structure formed at said bottom edge of said penetrating means for contacting the upper portion of said lip seal as the seal penetrating means is moved relative to the lip seal, said tip structure forcing said upper portion outwardly from the piston rod permitting movement of the penetrat-

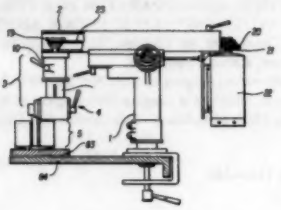
ing means between the upper portion and the piston rod and permitting said gas under pressure to flow past said upper portion via said gas pathway means, whereby said gas is operative to generate sufficient force to move said lower lip portion out of sealing engagement with said piston rod, thereby facilitating pressurization of said working chamber.

4,483,378

FEEDING DEVICE OF WOOD WORKING MACHINE

James Chang; Jen-Wen Chang; Kai-Jou Chang, and Horng-Tswen Chang, all of No. 68, Chung-Cheng Rd., Fong-Yun, Taichung District, Taiwan

Filed Apr. 12, 1983, Ser. No. 484,318
Int. Cl.³ B27B *25/00*; B27C *1/12*
U.S. Cl. 144—246 E **1 Claim**



1. A feeding device used for a wood working machine comprising:

a column;

a cantilever arm;

power means mounted on said over-arm;

a cantilever hung from said cantilever arm including, an upper portion mounted to said cantilever arm said upper portion having upper and lower sides, and steerable to turn about a vertical axis relative to said overarm, and two arm portions symmetrically extended from the lower side of said upper portion and steerable to turn about a first horizontal axes relative to said upper portion; two sets of roller assemblies respectively mounted to said arm portions, each of said roller assemblies including, a roller support connected to said arm portion and steerable to turn relative to said arm portion about a second horizontal axis perpendicular to said first horizontal axis, and at least two rows of rollers attached to said support and respectively rotatable about two third horizontal axes parallel to said second axis, said second and third axes being arranged at locations of apexes of a triangle, distances of said third axes from said second axis being unequal; and

transmission elements including, spur gears, bevel gears, and shafts cooperably mounted in said head for transmitting rotational movements from said power means to said rollers.

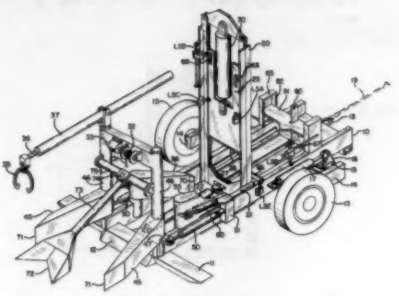
4,483,379

WOOD/LOG PROCESSING MACHINE

Warren A. Aikins, 3489 Indian Creek Dr., and Thomas N. Melin, 2231 Cascade Way, both of Longview, Wash. 98632

Filed Dec. 29, 1982, Ser. No. 454,193
Int. Cl.³ B27L *7/00*; B27B *1/00*
U.S. Cl. 144—366 **22 Claims**

1. A wood/log processing machine comprising an elongated main frame, a shear blade frame movable along said main frame, a shear blade in said shear blade frame transverse to the axis of a log in the machine, means for advancing said shear blade less than entirely through the log leaving the leading end of the log connected to its trailing end, means to move said shear blade frame away from the input end of said main frame to advance the log along said main frame, and means to advance the shear blade entirely through the log to shear off said leading end.

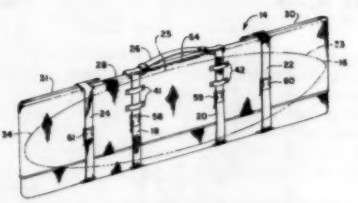


4,483,380

FOLDABLE PROTECTIVE COVER AND CARRIER FOR SPORTS EQUIPMENT

Mark A. Beran, Niwot, Colo., assignor to BC Creations, Inc., Niwot, Colo.

Filed Dec. 29, 1982, Ser. No. 454,131
Int. Cl.³ B65D *81/02, 85/00*; A63C *15/06*
U.S. Cl. 150—52 R **15 Claims**



1. A protective cover for elongated sports equipment, said cover comprising:

an outer layer of material having inner and outer sides and a length and width greater than said elongated sports equipment;

an inner layer of foam material at said inner side of said outer layer, said inner layer having a length greater than said elongated sports equipment but less than that of said outer layer, with said inner layer being positionable adjacent to said elongated sports equipment;

first and second straps;

retaining means fastened to said outer side of said outer layer for positioning said straps across the width of said outer layer at the central portion thereof, said first and second straps holding said cover wrapped about said elongated sports equipment with dual layers over the bottom of said elongated sports equipment;

third and fourth straps attached to said outer side of opposite ends of said outer layer and extending across the width thereof, said third and fourth straps holding said cover wrapped about the opposite ends of said elongated sports equipment with at least dual layers of cover about said elongated sports equipment ends; and

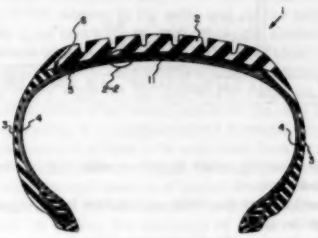
handle means connected with said first and second straps so that said assembled cover having said elongated sports equipment therein may be readily carried.

4,483,381

PNEUMATIC TIRE WITH BELT REINFORCEMENT

Richard M. Scriver, Atwater, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 7, 1983, Ser. No. 472,906
Int. Cl.³ B60C 17/00
U.S. Cl. 152—155 10 Claims



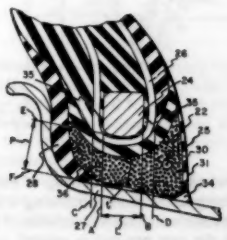
1. A pneumatic rubber tire comprised of a toroidal shaped fabric-reinforced rubber carcass and an outer circumferential rubber tread, two spaced substantially inextensible beads and two sidewalls extending radially from and connecting said tread to said beads, said tire characterized by having a circumferential fabric reinforced rubber belt positioned between said tread and supporting carcass where the rubber of said belt is comprised of (A) about 10 to about 45 weight percent medium vinyl polybutadiene rubber, (B) about 55 to about 90 weight percent cis 1,4-polyisoprene rubber selected from at least one of natural rubber and synthetic cis 1,4-polyisoprene and (C) about 0 to about 30 weight percent cis 1,4-polybutadiene rubber.

4,483,382

TIRE BEAD WITH LAYER OF CELLULAR ELASTIC MATERIAL BENEATH BEAD CORE

Wolfgang Koch, Useldange, and Thomas Welter, Keispelt, both of Luxembourg, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 14, 1983, Ser. No. 531,980
Int. Cl.³ B60C 15/06
U.S. Cl. 152—362 R 3 Claims



1. A tubeless pneumatic tire comprising a bead with a substantially conical base portion, which, when mounted on a rim, engages into an airtight seal with the conical bead seat portion of the rim, characterized in that the area of the bead which is axially limited by two axial spaced apart planes which are parallel to the mid-circumferential plane, the first axial plane of said axial planes passing through the axially outermost edge of the bead core and the second axial plane of said axial planes passing through the axially innermost edge of the bead core, and which area is radially limited by a first conical section surface of the bead seat and by a second conical surface parallel thereto and passing through the radially innermost edge of the bead core, comprises a layer of an air impermeable material and radially outwardly thereof a layer of cellular elastic material which in axial direction extends at least up to the first and the second axial planes and in radial direction has a thickness which lies in the range of 0.3 to 0.8 times the distance between the first and the second conical surfaces.

4,483,383

PROCESS FOR COMPACTING GRANULAR MATERIALS

Hans Tanner, Schaffhausen, Switzerland, assignor to George Fischer Ltd., Switzerland

Filed Oct. 13, 1981, Ser. No. 310,968
Claims priority, application Switzerland, Nov. 6, 1980, 8235/80
Int. Cl.³ B22C 15/00
U.S. Cl. 164—37 7 Claims

1. A process for compacting granular foundry mold material in a closed and sealed chamber, comprising the steps of:

adding a primary hydrocarbon fuel of natural gas and air into a closed combustion chamber over and exposed to a surface of the material being compacted;

adding and mixing with the primary fuel a gaseous additive fuel of hydrogen gas; and

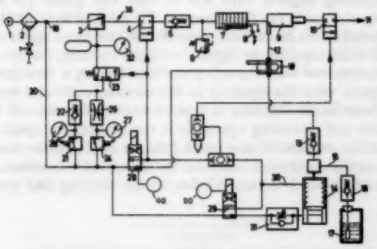
igniting the mixed fuels to initiate an exothermic reaction developing and exerting pressure on the material surface to compact the material.

4,483,384

APPARATUS FOR HARDENING MOLD PARTS MADE OF SAND FOR MAKING METAL CASTINGS

Horst-Werner Michel, Jahnstrasse 25, D-7707 Engen, Fed. Rep. of Germany

Division of Ser. No. 155,526, Jun. 2, 1980, Pat. No. 4,359,082, which is a continuation of Ser. No. 928,901, Jul. 28, 1979,. This application May 17, 1982, Ser. No. 379,073
Int. Cl.³ B22C 9/12
U.S. Cl. 164—154 9 Claims



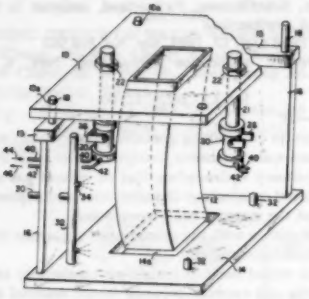
1. An apparatus for hardening sand mold parts of a sand and binder mixture by passing a catalyst through the parts, said apparatus having a source of compressed air and a passage connecting said source to the mold parts, said apparatus characterized by a valve at each end of said passage for closing off and isolating a portion of said passage from both said source and the mold part, a source of liquid catalyst connected to said passage, said liquid catalyst source including means for injecting a measured quantity of catalyst into said passage; said portion of said passage between said valves forming a catalyst vaporizing chamber and a heater for heating air trapped in said chamber to the vaporization temperature of the catalyst; clock means for maintaining said portion isolating valves closed long enough for vaporization of all of the catalyst and for intermittently and simultaneously opening said portion isolating valves at both ends of said passage to pass compressed air through said passage; said clock means being connected to said injecting means for activating said injecting means only when and after said valves are initially closed.

4,483,385

SYSTEM FOR OSCILLATING MOLD TUBE IN CONTINUOUS STEEL CASTING MACHINE

Cass R. Kurzinski, Milford, Pa., assignor to AMB Technology, Inc., New York, N.Y.

Filed Nov. 5, 1981, Ser. No. 318,380
Int. Cl.³ B22D *11/04, 11/124, 27/08*
U.S. Cl. 164—416 **4 Claims**



1. A continuous casting machine for casting metals whose melting point temperature is in excess of about 2,600° F., comprising: an open, stationary housing including a bottom wall having an opening therethrough and upstanding side walls projecting upwardly from the bottom wall, defining an open top to the housing; at least one upstanding guide pin on the upper end of the side walls; drive means carried by the open housing and including movable members projecting upwardly in the housing and movable in an up and down direction relative to the housing; a movable top plate having an opening therethrough and carried by the movable members for up and down movement with the movable members in a position overlying the open top of the housing and having at least one guide opening aligned with said at least one guide pin and receiving the guide pin therethrough for guiding the top plate in its up and down movement; a mold tube having an upper end secured to the top plate in registry with the opening, for up and down movement with the top plate, and having a free lower end aligned with the opening in the bottom wall; and spray means fixed to the housing in spaced relationship around the mold tube and extending upwardly in the housing for spraying the exterior surface of the mold tube to cool molten metal therein as the mold tube is moved by the movable members in an up and down direction relative to the housing and spray means.

4,483,386

METHOD TO BE CARRIED OUT IN A HORIZONTAL CONTINUOUS CASTING PLANT FOR INTRODUCING A STARTER BAR HEAD OF A STARTER BAR INTO THE OPEN ENDS MOULD OF THE HORIZONTAL CONTINUOUS CASTING PLANT

Werner Scheurecker, Linz, Austria, assignor to Voest-Alpine Aktiengesellschaft, Linz, Austria

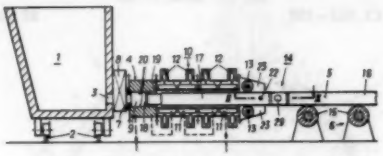
Filed Sep. 24, 1982, Ser. No. 423,010
Claims priority, application Austria, Oct. 9, 1981, 4343/81
Int. Cl.³ B22D *11/08*
U.S. Cl. 164—483 **5 Claims**

1. A method to be carried out in a horizontal continuous casting plant of the type including an open ends mould having an axis extending along the strand extraction direction and a strand guide, for introducing a starter bar head of a starter bar into said mould, which method comprises the steps of

removing said mould from said continuous casting plant and placing it in a position in which said axis is oriented vertically,

threading said starter bar head, which is separated from said starter bar, into said mould and fixing said starter bar head in its position relative to said mould,

repositioning said mould in a position in which said axis is oriented horizontally and installing said mould into said



continuous casting plant together with said starter bar head fixed thereon,

coupling said starter bar with said starter bar lying in the strand guide, and

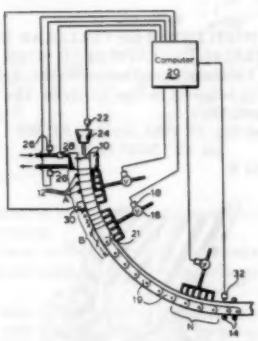
undoing the fixation of said starter bar head.

4,483,387

METHOD OF CONTROLLING COOLING OF A CONTINUOUS CASTING

Alain Chielens, Marcq en Baroeul; Philippe Benoit, and Bernard Roggo, both of Lambersart, all of France, assignors to Fives-Cail Babcock, Paris, France

Continuation-in-part of Ser. No. 242,143, Mar. 9, 1981,. This application Sep. 22, 1982, Ser. No. 421,451
Claims priority, application France, Oct. 2, 1981, 81 18586
The portion of the term of this patent subsequent to Aug. 7, 2001, has been disclaimed.
Int. Cl.³ B22D *11/16, 11/124*
U.S. Cl. 164—455 **2 Claims**



1. In a method of controlling cooling of a cast product in a continuous casting installation comprising a mold and a secondary cooling zone including a succession of cooling sections through which the cast product is guided, wherein the cast product is fictitiously divided into elements and flows of cooling water are delivered to successive ones of the cooling sections at respective flow rates, the quantity C of heat to be extracted from each one of the cast product elements by the cooling water and the surface temperature T thereof are periodically determined by means of respective curves $C=f(t)$ and $T=g(t)$ giving the variations of C and T as a function of the age of the elements, a coefficient of thermal exchange is computed for each one of said elements on the basis of determined values C and T and then a specific water flow rate value is computed for each one of said elements, the values of the flow rate of water to be projected on each one of the elements in each successive cooling section is computed, the water flow rate values for the elements in each successive cooling section in

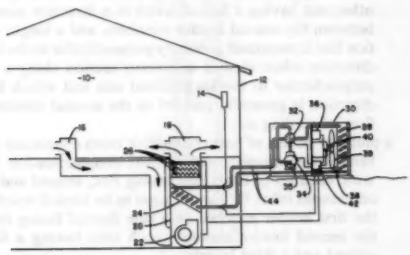
the secondary cooling zone are integrated to determine the water flow rate values for each successive cooling section, and the delivery of cooling water to the successive cooling sections is controlled to maintain the water flow rates at the computed values, curve $C=f(t)$ being displaced parallel to a coordinate axis of time before each computation of the values of the water flow rate for each element until the curve passes through a point whose coordinates are, on the one hand, the total dwell time t_1 of the element in the mold and, on the other hand, the quantity C_1 of heat to be extracted from the element during the total dwell time in the mold: the step of determining heat quantity C_1 by periodically determining the total quantity of heat extracted from the cast product in the mold, distributing this total quantity of extracted heat over the used height of the mold according to a predetermined formula, deriving therefrom the quantity of heat to be extracted from each one of the cast product elements present in the mold at that moment, and computing the total quantity of heat to be extracted in the mold from each one of said elements at the point of emergence from the mold by adding the quantities of extracted heat periodically determined during the dwell time of the element in the mold.

4,483,388

APPARATUS AND METHOD FOR PROVIDING FAILSAFE SUPPLEMENTAL HEAT REGULATION IN AN AIR CONDITIONING CONTROL

Mario F. Briccetti, and John D. Manning, both of Liverpool, N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Mar. 29, 1982, Ser. No. 362,783
Int. Cl.³ F25B *13/00, 29/00*
U.S. Cl. 165—2 **3 Claims**



1. An air conditioning system for supplying heat energy to a space for maintaining a space temperature which comprises:

a thermostat for sensing a need for heating and for generating a signal in response to the sensed need, said thermostat including a first stage temperature sensor and a second stage temperature sensor;

a heat generation means connected to an energy source for generating heat energy, said heat generation means including a first heating means and a supplemental heating means;

a control electrically connected to the thermostat and the heat generation means for appropriately regulating the heat generation means in response to the signal received from the thermostat, said control receiving operating power separately from said signal;

said thermostat further including a supplemental heat switch arranged with the first stage temperature sensor being connected to energize the first heating means through the control and the second stage temperature sensor being connected to energize the supplemental heating means through the control when the supplemental heat switch is not in a closed position and the thermostat senses a need for heating, and the first stage temperature sensor being connected to energize the supplemental heating means through the control when the supplemental heat switch is in the closed position; and

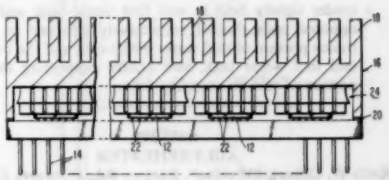
wherein said control is arranged such that an electrical connection is made between the control and the heat generation means when operating power to the control is discontinued whereby upon the supplemental heat switch being closed the supplemental heating means may be energized with operating power to the control being discontinued.

4,483,389

TELESCOPING THERMAL CONDUCTION ELEMENT FOR SEMICONDUCTOR DEVICES

Demetrios Balderes, Wappingers Falls; Joseph L. Horvath, and Lewis D. Lipschutz, both of Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 10, 1982, Ser. No. 356,677
Int. Cl.³ H01L *23/40*
U.S. Cl. 165—80 B **12 Claims**



1. A compliant telescoping heat exchange element for conducting heat in a semiconductor package from a semiconductor device to a spaced heat sink comprising

a first cup-shaped member formed of heat conductive metal provided with a flat bottom surface adapted to be placed in contact with a surface of said semiconductor device, and an annular wall,

a second cup-shaped member formed of heat conductive metal provided with a flat bottom surface adapted to be placed in contact with a surface of said heat sink, and an annular resilient slotted wall juxtaposed in telescoping slidable relation to said wall of said first cup-shaped member,

means to provide a firm sliding contact between said wall of said first cup-shaped member and the resilient slotted wall of said second cup-shaped member.

4,483,390

HEATER CORE OF AN AUTOMOTIVE AIR CONDITIONING DEVICE

Katsutoshi Araya, Sagamihara, and Hiroshi Tanaami, Sano, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama and Nihon Radiator Co. Ltd., Tokyo, both of, Japan

Filed Jul. 30, 1982, Ser. No. 403,860
Claims priority, application Japan, Sep. 30, 1981, 56-155656
Int. Cl.³ F28F *13/00*
U.S. Cl. 165—104.32 **10 Claims**

8. A heater core comprising:

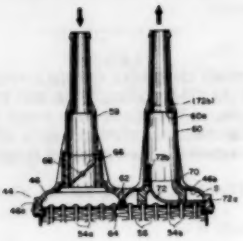
first and second water tanks which are spaced from each other;

a plurality of parallel tubes extending between said first and second water tanks to provide fluid communication therebetween;

a plurality of heat radiation fins, each being disposed between mutually neighbouring tubes;

a water outlet tube connected to said first water tank for discharging water from said heater core, said water outlet tube having a throat portion formed therein;

an air escaping tube extending from a predetermined interior portion of said first water tank to the interior of said water outlet tube, said predetermined interior portion being a corner portion of said first tank where an air pocket tends to appear under practical operation of the heater core, a downstream end of said air escaping tube being located at said throat portion; and



a holder tightly held in said first water tank and having opposed ends thereof respectively attached to the entrance portion of said water outlet tube and the bottom of said first water tank, said holder supporting thereon a portion of said air escaping tube.

4,483,391

AIR PREHEATER

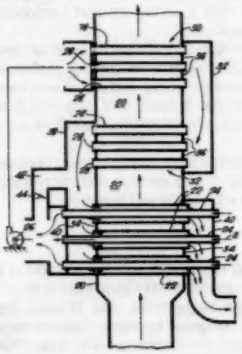
Keith W. Gilbert, "Wynton", Rectory Rd., Padworth Common, Berkshire, England

Filed Jan. 11, 1982, Ser. No. 338,727

Claims priority, application United Kingdom, Jan. 9, 1981, 8100656

Int. Cl.³ F28F 19/00, 13/06

U.S. Cl. 165—134 DP **8 Claims**



1. An air preheater comprising an outer casing defining a path for the passage of flue gases; a plurality of inner casings each defining a passageway through the outer casing and being positioned within the outer casing; a plurality of central ducts each passing through an inner casing; the ducts and inner casings each adapted to contain air to be preheated flowing first through a duct in one direction and thereafter between the duct and its associated inner casing in the opposite direction; a plurality of tubes extending through the outer casing for preheating air after passage through said central ducts; means for passing air to be preheated first through the central ducts and thereafter between the ducts and the respective inner casings whereby air in said central ducts is in heat exchange relation with air between the central ducts and inner casings which air is in heat exchange relation with flue gases in the outer casing.

4,483,392

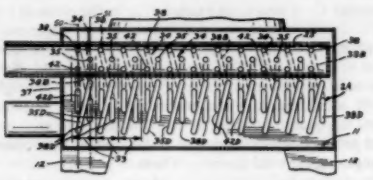
AIR TO AIR HEAT EXCHANGER

Edward S. Korsmo, Minnetonka, and Eugene R. Boedecker, Mound, both of Minn., assignors to Xchanger, Inc., Hopkins, Minn.

Filed Apr. 1, 1982, Ser. No. 364,391

Int. Cl.³ F28D 7/08

U.S. Cl. 165—150 **2 Claims**



1. A heat exchange apparatus for cooling gases, such as air from an industrial process, with a cross flow of cooling air comprising:

a frame defining an open central area through which cooling air will flow and having side frame members that are spaced apart;

a first input header member for receiving the gas to be cooled adjacent and to the exterior of one of the side frame members;

a second header member for discharging the cooled gas adjacent and to the exterior of a second of said side frame members;

each of said header members having a longitudinal axis extending generally in the same direction as the axis of the other and having a lateral width in a direction measured between the second header members, and a height direction that is measured generally perpendicular to the lateral direction when viewed in a cross section along a plane perpendicular to the longitudinal axis and which height direction is generally parallel to the normal direction of flow of cooling air;

a plurality of sets of heat conductive tubes connected to the first header member and in fluid communication therewith, each set of tubes comprising first, second and third continuous tubes for carrying gas to be cooled coupled to the first header member on a side thereof facing toward the second header member, each tube having a first, a second and a third length;

the first and second tubes each having first lengths joining the first header with axes lying in a reference plane perpendicular to the longitudinal axis of the first header and being spaced apart in height direction to lie near the edges of the first header in height direction and the third tube of each set having a first length joining the first header and being offset longitudinally from the reference plane and substantially midway in the height direction of the first header;

the tubes having first bend portions joining the first tube sections adjacent the second side frame member on the exterior of the frame, second lengths of the first, second and third tubes joining the first bend portions and extending back toward the first side frame member, the second lengths being positioned offset in height direction from the first lengths and the axes of the second lengths of the first and third tubes lying in a second plane parallel to the reference plane and passing through the axis of the first length of the third tube, the axis of the second length of the second tube lying on the reference plane and the second length of the second tube being positioned substantially midway in height direction between the second lengths of the first and third tubes;

the tubes having second bend portions positioned adjacent and to the exterior of the first frame member and connected between the second and third lengths of the tubes,

the third lengths extending back toward the second frame member, and being offset in height direction from the second lengths and also offset in height direction from the first lengths, the second bend portions placing the axes of the third lengths of the third and second tubes on said reference plane and spaced apart in height direction, and the axis of the third length of the first tube being on the second plane and midway in height direction between the third lengths of the second and third tubes;

the first bend portion of the first tube spanning the first bend portion of the second and third tubes and the second bend portion of the third tube spanning the second bend sections of the first and second tubes;

the first, second and third lengths of each tube spanning the open central area, the ends of the third lengths of each tube of each set opening to the second header to discharge process gases; and

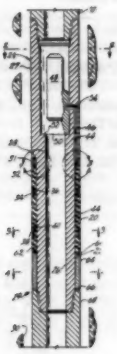
means to create a cooling airflow through the open central area across all of the tube lengths.

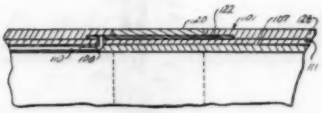
4,483,393

WELL LOGGING APPARATUS AND METHOD FOR MAKING SAME

Henry S. More, Carmichael, and Christopher E. Koch, Sacramento, both of Calif., assignors to Exploration Logging, Inc., Sacramento, Calif.

Filed Sep. 24, 1982, Ser. No. 423,003
Int. Cl.³ G01V 3/20
U.S. Cl. 166—65 R **6 Claims**





1. Well logging apparatus comprising:

an insulating sleeve having a longitudinal opening through it and adapted to fit around a portion of a drill string;

the sleeve including an internal and longitudinally extending spline adapted to make a sliding fit in a matching longitudinal groove in the drill string;

at least one annular ring of electrically conductive material embedded in the sleeve, a surface portion of the ring being exposed to contact fluid in the well when mounted on the drill string;

an anchor strip secured to the ring and embedded in the sleeve, the strip having a greater longitudinal than the ring; and

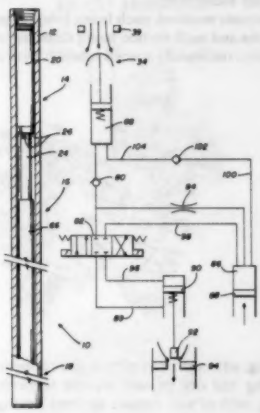
at least one conductor embedded in the sleeve and connected to the ring, the conductor extending out of the sleeve to permit the conductor to be connected to a logging circuit in the drill string.

4,483,394

HYDRAULIC POWER UNIT FOR MEASUREMENT WHILE DRILLING APPARATUS

James M. Peppers, and Farhat A. Shaikh, both of Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Nov. 1, 1982, Ser. No. 438,078
Int. Cl.³ E21B 47/12
U.S. Cl. 166—113 **11 Claims**



1. In a measurement while drilling system having a drill string mounted downhole instrument including a heading and inclination sensing instrument, and an associated hydraulically powered mud modulating device contained within an instrument drill collar of the drill string, an improved hydraulic powered unit therefore, comprising:

(a) a outer body sleeve ridigly and sealably mounted in said instrument drill collar;

(b) a rigidly mounted fixed inner sleeve connected to said outer body sleeve in concentric relation thereto;

(c) a longitudinally, movable plunger assembly having inner and outer sleeve members concentrically and telescopically mounted with said fixed inner sleeve forming a hydraulic power fluid reservoir with said fixed inner sleeve and also forming a drilling fluid flow passage with said outer body sleeve, said plunger assembly being movable between a telescopically extended position toward a telescopically retracted position to provide hydraulic power fluid to said mud modulating device; and

(d) said plunger assembly includes at the upper end thereof a tubular segment sealably and slidably mounted within said outer body sleeve and having an occlusion therein operable to create a pressure differential in the mud flow through said hydraulic power unit while said plunger assembly is in a position other than in said retracted position.

4,483,395

WIRE GUARD DEVICE FOR WELLS

Dean C. Kramer, Mason City, and Jay D. Crawford, Sheffield, both of Iowa, assignors to Martinson Manufacturing Company, Inc., Sheffield, Iowa

Filed Aug. 1, 1983, Ser. No. 519,191
Int. Cl.³ E21B 17/10
U.S. Cl. 166—241 **7 Claims**

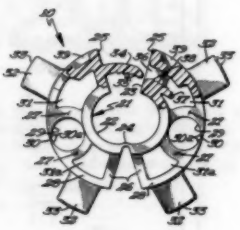
1. A single-piece guard device formed of a non-metallic material engagable with a well pipe for preventing the abrasion

of the well pipe, electrical wires, ropes and the like with the well casing, comprising:

a circular inner ring having an inner surface and an outer surface and having a split therein to define an opening, the radial thickness of said inner ring being reduced at a location substantially opposite of said split to define a hinge thereat permitting flexing of the inner ring when in the open and closed positions, said inner ring when in the open position permitting a well pipe to pass through the opening defined at the split, and when in the closed position said inner ring engaging the well pipe;

a plurality of ribs integral with said inner ring and extending outwardly therefrom;

a pair of arcuate sections, each being integral with a plurality of said ribs and each section being disposed in substantially concentric, outwardly spaced relation with respect to said



inner ring, adjacent pairs of said ribs cooperating with said inner ring and one of said arcuate sections to define an opening, each of said arcuate sections having a slit therein communicating with one of said openings and permitting an electrical conductor or rope or the like to be snapped through the slit when the device is mounted on a pipe, each of one adjacent pair of ribs extending outwardly from said inner ring at said split and being integral with adjacent end portions of said arcuate sections;

a plurality of tabs on each of said arcuate sections extending outwardly therefrom and being engagable with the well casing to space the associated pipe from the latter; and

a pair of locking elements each being integral with one of said one adjacent pair of ribs and being urged into engaging locking relation with each other when said inner ring is in the closed position to mount the guard device on a pipe.

4,483,396

LANDFILL GAS WELL

James R. Kennelly, 3569 Cerritos Ave., Long Beach, Calif. 90807

Filed Jun. 24, 1983, Ser. No. 507,567
Int. Cl.³ E21B *43/08*
U.S. Cl. 166—242 **1 Claim**

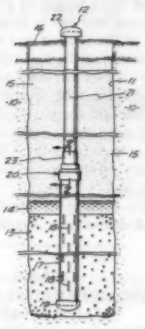
1. In a gas well having a first pipe with imperforate side walls received within a downwardly extending well bore and a second pipe of larger internal diameter than the external diameter of the first pipe, said second pipe having a plurality of openings in its sidewall and being located within the well bore below the first pipe, the interior of said first and second pipes being in open communication with each other such that gas entering the openings in the second pipe sidewall can move upwardly into the first pipe, the improvement comprising:

a cylindrical sleeve of internal diameter exceeding the diameter of the first pipe slidingly received onto the first pipe;

first and second elastomeric O-ring means located, respectively, within first and second spaced apart grooves on the sleeve inner wall for forming a sliding gas seal between said sleeve and first pipe;

an outwardly extending rim unitarily related to the lower end of the first pipe having an outer diameter exceeding the sleeve inner diameter but less than the second pipe inner diameter;

a cylindrical collar having a small diameter end secured to the outer surface of the sleeve and a larger diameter end extending downwardly along said sleeve and forming an



open space between the collar and the outer surface of said sleeve; and

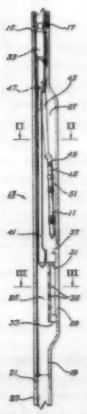
the upper end of said second pipe being received within the open space between said collar and sleeve and supporting by engaging said collar.

4,483,397

METHOD AND APPARATUS FOR MONITORING WELL TUBING FLUID

William R. Gray, Huntsville, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed Dec. 27, 1982, Ser. No. 453,050
Int. Cl.³ E21B *47/00*
U.S. Cl. 166—250 **6 Claims**



1. A method of monitoring fluid within well tubing, comprising the steps of:

installing a well tubing mandrel downhole in well tubing, said mandrel having a main bore, a side pocket offset from the main bore, and a passage between the main bore and the side pocket, the exterior surface of the mandrel being free of apertures;

mounting a coupon in a carrier, said coupon being a rod of selected material;

placing the carrier into the side pocket, with the coupon in

communication with the passage, for a specified time period.

removing the carrier from the well tubing; and

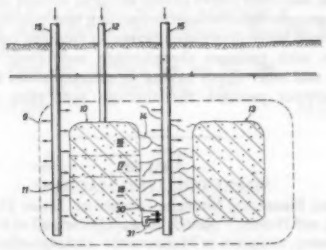
inspecting the coupon.

4,483,398

IN-SITU RETORTING OF OIL SHALE

Greg G. Peters, Spring, and Robert C. West, Houston, both of Tex., assignors to Exxon Production Research Co., Houston, Tex.

Filed Jan. 14, 1983, Ser. No. 457,833
Int. Cl.³ E21B *43/247*
U.S. Cl. 166—259 **3 Claims**



1. A method for in-situ retorting of oil comprising:

(a) heating kerogen-containing oil shale in a subterranean retort to decompose the kerogen to produce hot liquid and gaseous decomposition products and a solid residue; and

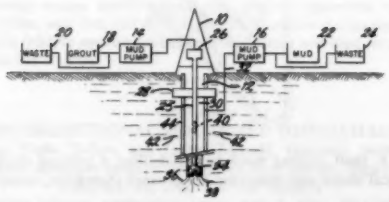
(b) injecting substantially only water into the subterranean formation surrounding the retort at a sufficient pressure and flow rate so that a portion of the injected water lessens the amount of hot liquid and gaseous kerogen decomposition products escaping from the retort and flows toward the retort thereby returning heat to the retort.

4,483,399

METHOD OF DEEP DRILLING

Stirling A. Colgate, 4616 Ridgeway, Los Alamos, N. Mex. 87544

Filed Feb. 12, 1981, Ser. No. 233,849
Int. Cl.³ E21B *7/20, 23/04*
U.S. Cl. 166—308 **15 Claims**



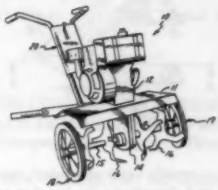
1. A method of preventing drilling fluid losses and blowouts during the drilling of a bore hole comprising the step of periodically and sequentially fracturing a zone at the bottom of the bore hole with a thixotropic fast-setting fluid and injecting such fluid into the zone to overstress the zone, the fracturing and injecting being periodic as a function of the progression of the drill, the volume of fluid injected in each injection being of the order of $r^3/300$ where r is a selected value for the extent of the fracture into the zone from the bore hole, the number of injections being from about two to about ten per each meter of drill progression, such injections being made along the entire extent of the well bore and the fluid having a gel strength Gs approximately equal to $(d\tau)^2/2B$ where $d\tau$ is a selected incremental stress to be added by each fracture and injection and B is the bulk modulus of the formation material, which the fluid fractures and into which the fluid is injected.

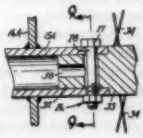
4,483,400

WHEEL WITH STUB AXLE RELEASABLY TO END OF POWERED TUBULAR SHAFT

Walter E. Arndt, 1713 Third Ave. South, Fargo, N. Dak. 58102

Continuation of Ser. No. 279,594, Jul. 1, 1981, abandoned. This application Aug. 31, 1983, Ser. No. 527,969
Int. Cl.³ A01B *73/00*
U.S. Cl. 172—42 **6 Claims**





4. An assembly for releasably fixing a wheel to the end of a powered tubular shaft, comprising: a powered tubular shaft having an end, pin means located proximate the end of the shaft and having a shank extending through the shaft; a wheel having a stub axle with a diameter slightly less than the inner diameter of the end of the shaft so as to be telescopically engageable with the end of the shaft, said axle having a hub having a shoulder with a diameter greater than the inner diameter of the one end of the shaft, said hub being engageable with the end of the shaft to limit axial movement of the axle into the shaft, slot means located on the stub axle engageable with the shank of the pin means when the stub axle is telescopically engaged in the end of the shaft, and groove means extending circumferentially from the slot means in the intended direction of powered rotation of the shaft and having substantially parallel, axially spaced apart side walls for close accommodation of the shank of the pin means in contiguous relationship to the side walls providing a seat for the shank when the stub axle is fully telescopically inserted in the end of the shaft whereby upon powered rotation of the shaft, the shank is moved into the seat of the groove and retained therein with the wheel axially locked on the shaft, and upon rotation of the wheel with respect to the shaft, the shank is moved back to the slot for axial removal of the wheel from the shaft.

4,483,401

TRASH CLEARING ASSEMBLY FOR FARM IMPLEMENTS

Forrest E. Robertson, Garden City, Kans., assignor to Acra-Plant, Inc., Garden City, Kans.

Filed Sep. 30, 1982, Ser. No. 429,799
Int. Cl.³ A01C *5/06*
U.S. Cl. 172—574 **11 Claims**

1. In a farm implement, a pair of independent units for clear-

ing trash ahead of the implement and laterally in opposite directions, each unit comprising:

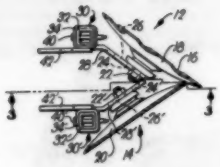
a ground-engageable disc having a sharpened, circular periphery, a convex inner surface and an opposed, outwardly facing concave surface;

an elongated bracket having a forward and a rear end;

an axle mounting the disc on the bracket at its forward end for rotation about the central axis of disc,

said axis being disposed at an angle with respect to the path of travel of the implement,

the bracket extending rearwardly from said axle;



an elongated, normally vertical support rigidly secured at its lowermost end directly to the bracket at the rear end of the bracket rearwardly of the axle and extending upwardly from the bracket; and

a mount on the support having means for releasably attaching the same to the implement,

said discs diverging as the supports are approached with one disc leading the other disc,

said brackets, axles, supports and mounts being laterally spaced and disposed above the level of said ground rendering the units separately removable from the implement upon detachment of said releasable means.

4,483,402

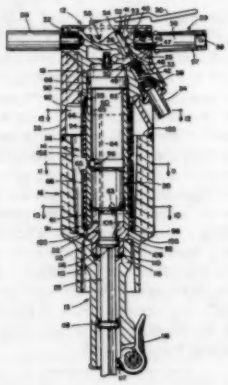
PAVING BREAKER

William Vonhoff, Jr., Montgomery, Ill., assignor to Thor Power Tool Company, Aurora, Ill.

Filed Dec. 1, 1981, Ser. No. 326,239

Int. Cl.³ B25B 45/16

U.S. Cl. 173—134 **8 Claims**



1. A paving breaker, comprising; housing means, cylinder means in the housing means reciprocably receiving a free piston, a tool slidably mounted in the housing means positioned to be impacted as the piston reciprocates in the cylinder means, valve means in the housing means for alternately porting fluid under pressure to opposite sides of the cylinder means to drive the piston in reciprocation, said cylinder means including an annular inner sleeve slidably receiving the piston and an outer sleeve spaced from the inner sleeve to define an axial passage therebetween, port means at one end of the inner sleeve communicating with the axial passage between the inner and outer sleeves, said valve means being connected to port fluid under pressure through the axial passage and the inner sleeve port means into the cylinder means to drive the piston in one direction, second port means adjacent the other end of the inner sleeve, said valve means being connected to port fluid under pressure to the second port means alternatly with the first port means to drive the piston in the other direction in the cylinder means, and exhaust port means positioned between the first port means and the second port means, said exhaust port means including a port in the inner sleeve controlled by the piston so that as the piston passes over the exhaust port fluid in front of the piston is compressed and fluid behind the piston is exhausted, said inner sleeve having an upper annular outer flange with passages therethrough supporting one end of the outer sleeve, said inner sleeve also having an enlarged outer central portion with passages therethrough supporting the outer sleeve, said inner sleeve having an enlarged outer lower portion without passages therethrough supporting the outer sleeve.

4,483,403

SHAFT DRILLING MACHINE

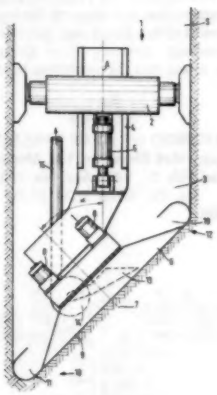
Johannes Hennecke, Mulheim-Uhlenhorst; Heinz Horst, Duisburg, and Helmut Podellek, Kamp-Lintfort, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed May 5, 1982, Ser. No. 375,038

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1982, 3209611

Int. Cl.³ E21D 1/06

U.S. Cl. 175—88 **5 Claims**



1. A shaft drilling machine for drilling a vertical shaft of eliptical shape and removing the borings therefrom, comprising:

(a) a machine frame;

(b) a drilling head rotatively driven and secured to said machine frame;

(c) said drilling head having vertically adjusting means for selectively vertically adjusting said drilling head in said vertical shaft;

(d) said drilling head having angular adjusting means for selectively adjusting the angular orientation of said drilling head with respect to the longitudinal axis of said vertical shaft;

(e) the angular orientation of said drilling head, with respect to said longitudinal axis, being in the range of at least 35° to about 50°;

(f) said drilling head having borings pickup means for transporting loosened borings from the relative lower end of said drilling head to the relative upper end of said drilling head when said drilling head is angularly oriented in said shaft;

(g) a vertical conveying mechanism for borings in communication with a portion of said drilling head; and

(h) a borings transport means for moving said borings from the relative upper end of said drilling head when said drilling head is angularly oriented in said shaft, to said vertical conveying mechanism said borings transport means, during operation, being at least partially facilitated in operation by the force of gravity.

4,483,404

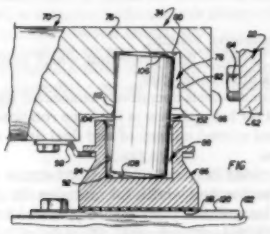
SELF-ALIGNING SCALE ASSEMBLY

Frederick H. Weihs, Toledo, Ohio, assignor to Benny N. Dillon, Worthington, Ohio

Filed Aug. 30, 1983, Ser. No. 527,790

Int. Cl.³ G01G *5/04, 19/02*

U.S. Cl. 177—255 **12 Claims**



FIG

1. An assembly comprising a load receiving means for receiving a load to be weighed, a plurality of force-transmitting assemblies for transmitting the load to a base, each of said force transmitting assemblies including a force measuring transducer, a slider member slidable relative to said load receiving means or base, and a self-restoring force-transmitting member for vertically transmitting a force component between said slider and force measuring transducer when said slider and force measuring transducer are aligned, means for effecting relative sliding movement between said slider and load receiving means or base to align said force measuring transducer and slider member in response to sideways movement of said load receiving means, a first stop surface connected with said load receiving means, and a second stop surface connected with said slider, said first and second stop surfaces being engageable to limit relative movement between said slider and load receiving means or base.

4,483,405

OMNIDIRECTIONAL MOTORIZED WHEELCHAIR

Takeo Noda, Tokyo, and Ichiro Tsunaki, Hachioji, both of Japan, assignors to Koyu Enterprise, Inc., Hyogo, Japan

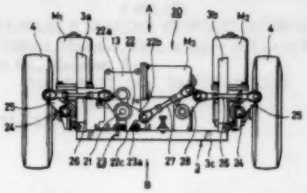
Filed Jul. 22, 1982, Ser. No. 400,695

Claims priority, application Japan, Aug. 5, 1981, 56-123548; Mar. 16, 1982, 57-40120

Int. Cl.³ B62D *11/04*

U.S. Cl. 180—6.5 **6 Claims**

1. An omnidirectional motorized wheelchair having front wheels consisting of a pair of free wheels, and rear wheels consisting of independent motor-operated wheels, comprising king pins, via which said motor-operated wheels are connected rotatably to a frame constituting a wheelchair body, tie rod arms connected fixedly to said king pins, a motor-operated steering unit provided between said motoroperated wheels and having a rotary steering shaft, and a pivotable member joined fixedly to said steering shaft, said pivotable member and said tie rod arms being connected together by tie rods, said motor-operated wheels being rotated in the opposite directions in accordance with the rotation of said steering shaft to set said



motor-operated wheels to face in the lateral direction with respect to a rider.

4,483,406

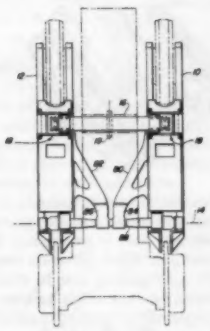
MOUNTING FOR CONNECTING A CROSSBAR TO A CRAWLER TRACTOR TRACK FRAME

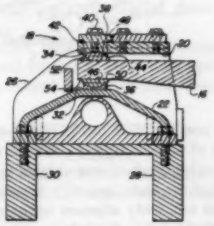
Joseph J. Smith, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Nov. 29, 1982, Ser. No. 445,319

Int. Cl.³ B62D *55/08*

U.S. Cl. 180—9.5 **5 Claims**





1. A mounting universally connecting an end of a front crossbar of a crawler tractor to a track frame, comprising: upper and lower support members fixed to said frame and respectively located above and below said end of the crossbar; one of upper and lower sides of said end of the crossbar, and said upper and lower support members being provided with a first pair of recesses respectively having bottoms defining a first pair of planar bearing surfaces; and ball and socket connection means interposed between said end of the crossbar and said upper and lower support members and including respective portions loosely received in said recesses and defining a second pair of planar bearing surfaces respectively slidably

engaged with said first pair of bearing surfaces for permitting relative fore-and-aft and transverse movement between the track frame and the crossbar at said mounting.

4,483,407

VARIABLE CONFIGURATION TRACK LAYING VEHICLE

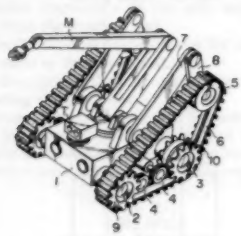
Taro Iwamoto, Mito, and Hiroshi Yamamoto, Ibaraki, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

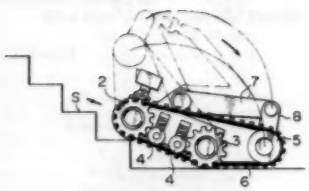
Filed Mar. 17, 1983, Ser. No. 476,271

Claims priority, application Japan, Mar. 26, 1982, 57-47177; Aug. 27, 1982, 57-147627

Int. Cl.³ B62D *55/00*

U.S. Cl. 180—9.5 8 Claims





1. A variable configuration track laying vehicle comprising a body, a series of wheels disposed at each side of said body and including a driving wheel rotatably mounted on said body adjacent to one of the ends thereof, a secondary wheel rotatably mounted on said body adjacent to the other end thereof and an auxiliary wheel movable relative to said body within a plane in which said driving wheel and secondary wheel are disposed, a loop of endless track extending around said driving, secondary and auxiliary wheels on each side of said body, means within said body for driving said driving wheel, and means for moving said auxiliary wheel relative to said body within said plane to vary the configuration of said loop of said endless track, said means for moving said auxiliary wheel including arm means comprising a first arm pivotally connected at one end to said body between said driving wheel and said secondary wheel and a second arm pivotally connected at one end to the other end of said first arm and rotatably supporting said auxiliary wheel at the other end of said second arm and means within said body for angularly moving said first arm relative to said body.

4,483,408

TRANSAXLE FINAL DRIVE ARRANGEMENT FOR REDUCING DRIVE TORQUE REACTION TRANSMITTED TO ENGINE AND TRANSMISSION UNIT

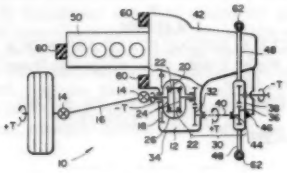
Komei Yazaki, Atsugi, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Sep. 29, 1982, Ser. No. 427,312

Claims priority, application Japan, Oct. 3, 1981, 56-157848; Apr. 3, 1982, 57-55655

Int. Cl.³ B60B *37/00*; B60K *17/24*

U.S. Cl. 180—70.1 6 Claims



1. In an automotive vehicle;

a transaxle having a final drive unit which final drive unit includes a differential gear;

first and second wheels operatively connected with said final drive unit for being driven in the same rotational direction by first and second outputs of said final drive unit respectively; and

means interposed between said final drive unit and one of said first and second wheels for reversing the effect of the reaction transmitted from said one wheel to said final drive unit when torque from said final drive unit is applied to said one wheel so as to negate the effect of the reaction simultaneously transmitted to said final drive unit from the other of said first and second wheels.

4,483,409

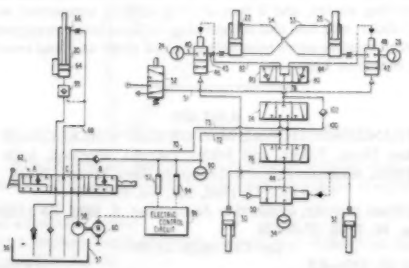
INTEGRAL HYDRAULIC TILT-CAB SUSPENSION AND TILTING APPARATUS

Johannes K. Fun, Delden, Netherlands, assignor to Applied Power Inc., Milwaukee, Wis.

Filed Mar. 7, 1983, Ser. No. 472,493

Int. Cl.³ B62D *27/00*

U.S. Cl. 180—89.15 11 Claims



1. In a tilt-cab tractor comprising:

(a) a chassis;

(b) a generally four-cornered cab mounted on said chassis and pivotable with respect to said chassis about an axis near the front end of said chassis;

(c) a suspension cylinder mounted between said chassis and said cab at each of a left and right front and rear corner of said cab;

(d) accumulator means hydraulically connected to said sus-

pension cylinders for providing cushioning in cooperation with said cylinders between said cab and said chassis;

(e) first conduit means for fluidically connecting said accumulator means and said suspension cylinders;

(f) at least one hydraulic cab tilting cylinder means pivotally mounted between said chassis and said cab to selectively tilt said cab between a normal running fully suspended position and a raised service position wherein the improvement comprises an integral hydraulic cab suspension and tilt system including:

a source of pressurized hydraulic fluid for selectively delivering pressurized hydraulic fluid to said at least one hydraulic cylinder means and said shock absorber suspension cylinders;

second hydraulic conduit mean for delivering hydraulic fluid to and returning hydraulic fluid from said at least one hydraulic cab tilting cylinder means;

third hydraulic conduit means for delivering hydraulic fluid to said first conduit means fluidically connecting said accumulator means and said shock absorber suspension cylinders;

control valve means interposed between said source of pressurized hydraulic fluid and said second and third hydraulic conduit means for selectively delivering fluid to said at least one hydraulic cab tilting cylinder means and said first conduit means; and

means connected to said first conduit means for selectively blocking flow of pressurized hydraulic fluid to said accumulator means when the tractor brakes are applied.

4,483,410

CENTRAL LOCKING SYSTEM

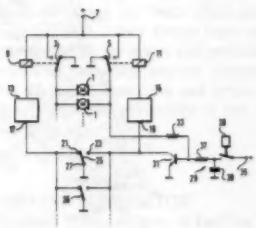
Rainer Fey, Schweinfurt, Fed. Rep. of Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Jan. 28, 1983, Ser. No. 461,950

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1982, 3205166

Int. Cl.³ E05B *63/00*

U.S. Cl. 180—281 **7 Claims**



1. A central locking system for motor vehicles comprising:

a plurality of electric locking drives;

at least one manually switchable control switch having contacts which are connected with one another on switching on of said locking drives in an unlocking direction;

a time control means which can be triggered by said control switch on setting of a predetermined switch position, said time control means being arranged for switching on the locking drives for a predetermined time duration in a drive direction allocated to said predetermined switch position;

an acceleration switch for responding to its acceleration;

an electronic short-circuit switch connected in parallel with said contacts of said control switch and being switchable into its short-circuit position by means of said acceleration switch; and

holding means for preventing repeated operation of said locking drives in response to repeated operation of said acceleration switch, said holding means including a latch circuit for maintaining the short circuit switch in the short circuit condition.

4,483,411

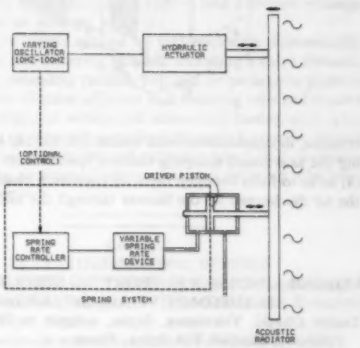
TUNABLE MARINE SEISMIC SOURCE

Joseph F. Mifsud, Houston, Tex., assignor to Exxon Production Research Co., Houston, Tex.

Filed Feb. 17, 1981, Ser. No. 235,202

Int. Cl.³ G01V *1/38*

U.S. Cl. 181—120 **14 Claims**



8. A marine seismic source comprising:

dual opposed acoustic radiating plates,

an actuator for oscillating each of said dual radiating plates adapted to produce a repeating acoustic signal in water, which frequency varies with time about linearly from about 10 Hz to about 20 Hz, said actuators being mechanically connected to each said plate,

a spring system attached to each of said radiating plates and having a spring rate that varies as a function of said frequency and comprising at least one piston and cylinder assembly, said assembly comprising two pistons and two cylinders, each of said pistons being attached to one of said dual radiating plates and said cylinders being liquid filled and being in hydraulic communication with means adapted for varying the effective spring rate of said spring system,

a frame for supporting said radiating plates, actuator, and spring system,

whereby the output impedance of said acoustic radiators is varied with said frequency so as to substantially maximize the effective output power of said source at said frequency.

4,483,412

NOISE ABSORPTION APPARATUS

Jean-Maurice Couturier, Orleans, France, assignor to Deere & Company, Moline, Ill.

Filed Nov. 4, 1982, Ser. No. 439,087

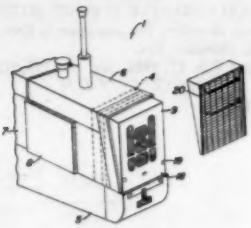
Claims priority, application European Pat. Off., Nov. 4, 1981, 81401766.1

Int. Cl.³ F01N *1/10*

U.S. Cl. 181—204 **17 Claims**

1. Sound damping device for machines or internal combustion engines mounted within a bonnet which substantially completely encloses the machine or the engine and provided with a blower which discharges cooling air outwardly through a radiator, comprising: damping element (9, 21) made of a sound absorbing material and having one or more central openings (14, 27) oriented substantially in the direction of discharge of the air by the blower (3) so as to permit a direct outflow of air and having peripheral openings (16, 28) which are inclined or specially shaped with respect to the said direc-

tion of discharge of the air in such a manner that the air passing through these openings is directed obliquely to the central flow of air issuing from the central opening or openings of the



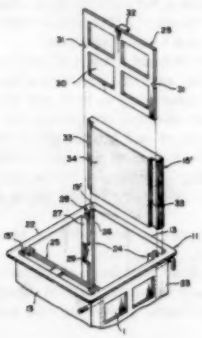
element, in combination with means (**11, 12, 24**) for maintaining the said sound damping element spaced from the radiator (**4**) so as to form between them an expansion chamber (**13**) for the air discharged by the blower through the said radiator.

4,483,413

SOUND ABSORBER SUPPORTING STRUCTURE FOR AN AUTOMOTIVE AIR INTAKE BOX

Toshio Ohashi, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 10, 1982, Ser. No. 448,762
Claims priority, application Japan, Jan. 28, 1982, 57/10887
Int. Cl.³ E04F *17/04*
U.S. Cl. 181—224 **12 Claims**



1. A sound absorber supporting structure for an air intake box of an automotive air conditioner, comprising sound absorber retaining means provided in association with each of at least two opposite side walls of an inside air—outside air changeover unit in said air intake box, thereby securely retaining, in position between said side walls and said retaining means, sound absorbers removably inserted along said side walls, wherein said sound absorber retaining means comprises:

a pair of guide means, each extending along one of said opposite side walls, each of said pair of guide means comprising a first and a second wall disposed in a spaced parallel relationship with each other so that a guide channel is defined therebetween, each of the second walls being disposed in such a manner that a gap is defined between each said second wall and a respective one of said side walls so that one of said sound absorbers may be removably inserted into each gap; and

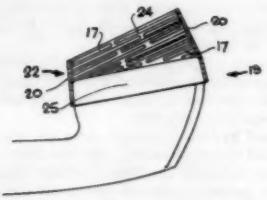
a pair of retainer plates adapted so that one may be inserted into each of said guide channels.

4,483,414

SOUND DAMPENING DEVICE FOR TELEPHONES

John S. Tanaka, 1343 Shoreway Rd., Belmont, Calif. 94002

Filed Jun. 24, 1983, Ser. No. 508,069
Int. Cl.³ G10K *11/04*
U.S. Cl. 181—242 **7 Claims**



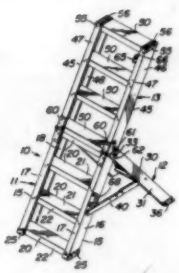
1. A sound dampening device for a mouthpiece of a telephone comprising, a sleeve having a bottom recess of a size to adaptively fit over a mouthpiece, and having a central chamber containing several layers of thin, flexible, rod-like members extending radially inward from the recess side walls, one layer juxtaposed to another layer with members spaced apart so as to form an intermeshing mat having interstitial air passages whereby said thin, flexible members promote sound attenuation.

4,483,415

FOLDING STEPLADDER

Horace C. Disston, and Timothy J. Eichfeld, both of 217 S. Hurffville Rd., Deptford, N.J. 08096

Continuation-in-part of Ser. No. 264,299, May 18, 1981, abandoned. This application Jul. 20, 1983, Ser. No. 515,559
Int. Cl.³ E06C *1/20, 1/383*
U.S. Cl. 182—22 **6 Claims**



1. A foldable ladder comprising a lower section for use inclined in one direction on a horizontal supporting surface, a series of parallel lower steps on said lower section and oblique thereto for generally horizontal disposition in use, a strut having one end pivotally connected to one end of said lower section for use inclined in the opposite direction on a horizontal suporting surface, said strut having its internal lateral dimension greater than the external lateral dimension of said lower section for relative swinging movement of said lower section toward and into said strut in the non-use condition, limit means connecting said lower section and strut for limited swinging movement away from each other, an upper section having one end pivotally connected to said one end of said lower section for swinging movement between an extended position in alignment with said lower section and a retracted position lying along said lower section, a series of parallel additional steps on said upper section and oblique thereto for generally horizontal disposition in both the extended and retracted positions, said additional steps being spaced for respec-

tive coplanarity with said lower steps when said upper section is in retracted position, a pivot pin effecting pivotal connection between said lower section and strut, and a latch on said upper section located for removable interengagement with said pin when said upper section is in said extended position.

4,483,416

HEIGHT ADJUSTABLE ROOF ENGAGING ATTACHMENT FOR LADDERS

Eduardo L. Garcia, 1108 W. 8th Pl., Yuma, Ariz. 85364

Filed Dec. 8, 1983, Ser. No. 559,465

Int. Cl.³ E06C *7/48*

U.S. Cl. 182—107 **8 Claims**

1. In combination with a ladder including upstanding opposite side rails and vertically spaced rungs extending and mounted between said side rails, a pair of screw shafts extending along and journalled from said side rails, elongated guides mounted from and extending along the upper end portions of said side rails, a pair of followers guidingly engaged with said guides for movement therealong and with which said screw shafts are threadingly engaged, rotary torque input means for applying rotary input torque to the lower end portions of said screw shaft, said followers including laterally outwardly projecting arm portions supported therefrom and projecting outwardly from a side ladder facing outwardly of one side of a plane containing said side rails.

4,483,417

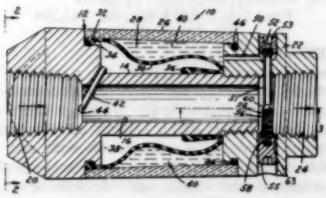
AIRLINE LUBRICATOR

David O. Mann, Marshall, Mich., assignor to La-Man Corporation, Hamilton, Ind.

Filed Jul. 28, 1982, Ser. No. 402,589

Int. Cl.³ F16N *7/32, 11/10*

U.S. Cl. 184—55.2 **11 Claims**



1. An airline lubricator comprising an enclosure including a central continuous air passage of uniform diameter extending along an enclosure axis from an inlet end of said enclosure to an outlet end, and means defining an annular chamber surrounding said air passage intermediate said ends,

a diaphragm of flexible resilient construction disposed in said annular chamber and dividing said annular chamber into a lubricant reservoir adjacent said outlet end and an air pressure chamber adjacent said inlet end,

means adjacent said inlet end for directing air in said air passage into said air pressure chamber,

metering means including a lubricant passage spaced radially from said air passage extending axially into said enclosure from said reservoir and a metering tube extending radially from the reservoir-remote end of said lubricant passage into said air passage, and

check valve means carried by said enclosure diametrically opposite said metering tube and including a valve element, a sleeve extending radially into said air passage to position said valve element adjacent said metering tube and a valve spring disposed within said sleeve and biasing said valve element against said metering tube, spring pressure on said valve element against said metering tube being overcome solely by pressure of lubricant in said metering tube from said reservoir.

4,483,418

ELEVATOR CONTROL SYSTEM

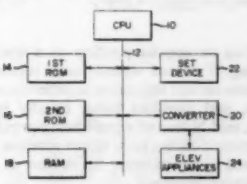
Yasukazu Umeda; Shinobu Tajima, and Toshiyuki Kamohara, all of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 214,432, Dec. 8, 1980, abandoned. This application Jul. 26, 1982, Ser. No. 401,989

Claims priority, application Italy, Dec. 17, 1979, 68928 A/80; Japan, Dec. 17, 1979, 54-163725; United Kingdom, Dec. 17, 1979, 8040414

Int. Cl.³ B66B *1/18*

U.S. Cl. 187—29 R **4 Claims**



1. An elevator control system for controlling an elevator car and having an electronic computer, said system comprising, a ROM device having stored therein first control data common to all elevator cars, and a setting device disposed separately from said ROM device and including a plurality of control elements, each of said control elements selectively providing one of either an ON or an OFF signal, said setting device setting second control data peculiar to said elevator car by combining said ON and OFF signals from said plurality of control elements.

4,483,419

ELEVATOR MOTORING AND REGENERATING DYNAMIC GAIN COMPENSATION

Jalal T. Salihi, Manchester, and Leca Boiucaner, Farmington, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Oct. 12, 1982, Ser. No. 434,015

Int. Cl.³ B66B *1/28;* H02P *5/40*

U.S. Cl. 187—29 R **9 Claims**

1. An elevator comprising:

a polyphase electric motor, said motor having N phases and corresponding windings, N being two or more;

a battery;

a battery charger;

an inverter for providing current or voltage to each stator winding in the motor, said inverter having an input for each winding and a corresponding output;

a position encoder for providing a signal (TACH) that identifies the motor shaft position, its speed and direction;

an elevator car that is propelled by the motor;

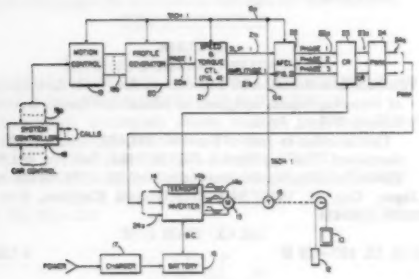
an elevator control system for controlling the operation of the inverter to produce alternating N phase current or voltage for said stator windings to control motor speed (r.p.m.), slip and direction;

the elevator system being characterized in that said control system comprises:

means for providing a signal (AMPLITUDE) in response to the TACH signal to control motor speed (r.p.m.);

means for providing a signal (SLIP) in response to the TACH signal to control the difference between the motor r.p.m. and the frequency (F SYNCH) of the alternating current or voltage that is supplied to the motor by the inverter;

means responsive to the SLIP signal and TACH signal for providing a signal that repeats at F SYNCH, said signal



identifying an angular position on a sine curve, and for providing N second signals, each representing t he Y-coordinate on said sine curve at different angular positions thereon, said positions being equally spaced apart by 360°/N, said N second signals being provided in a successive sequence during each motor rotation, the sequence in one motor direction being the reverse of the sequence in the opposite direction;

means for varying the magnitude of each second signal as a function of the AMPLITUDE signal;

means for applying each second signal to one of the inverter inputs according to said successive sequence;

means for providing a dictated motor speed signal in response to the TACH signal, said dictated motor speed signal representing a desired motor speed; and

means for providing a torque control signal in response to said dictated speed signal and said TACH signal and varying said torque control signal in relation to the motor speed for a constant dictated speed signal;

said means for providing said AMPLITUDE signal and means for providing said slip signal being responsive to said torque control signal.

4,483,420

ELEVATOR DOOR INTERLOCKING APPARATUS

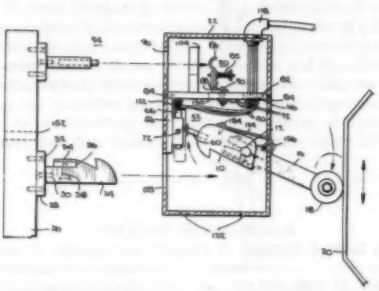
Francis J. Byrne, 43 Francine Ave., Massapequa, N.Y. 11758

Filed Jul. 1, 1982, Ser. No. 394,164

Int. Cl.³ B66B 1/00

U.S. Cl. 187—31 **14 Claims**

1. In an apparatus for locking a hinged elevator hatchway door in a closed position in an elevator doorway when an elevator car is not present at said doorway, said apparatus including housing means adapted for mounting in said elevator doorway, first latch member means movably mounted in said housing means, first electrical contact means disposed in said housing means, second electrical contact means adapted for mounting on said elevator hatchway door for engaging said first electrical contact means when said door is disposed in said closed position, second latch member means adapted for mounting on said elevator hatchway door and adapted to engage said first latch member means when said elevator hatchway door is disposed in said closed position and said elevator car is not present at said doorway, said housing means further including first aperture means for receiving said second latch member means and second aperture means for receiving said second electrical contact means when said elevator hatchway door is disposed in said closed position, the improvement comprising, third electrical contact means disposed within said housing means, and fourth electrical contact means disposed on said second latch member means for engaging said third electrical contact means, said third electrical contact means being operatively connected to said first latch member means



and being slidably mounted relative to said first latch member means and in a direction substantially transverse to a longitudinal dimension of said first latch member means so as to move in a vertical direction toward said fourth electrical contact means when said elevator hatchway door is disposed in said closed position, said third electrical contact means being hidden in said housing means between said first and second aperture means so that when said door is disposed in said closed position and said first and second latch member means engage, said third electrical contact means moves toward said second latch member means and is electrically connected to said fourth electrical contact means, whereby said elevator car is prevented from moving until said elevator hatchway door is closed, said first latch member means has engaged said second latch member means, and said first and second electrical contact means and said third and fourth electrical contact means are engaged.

4,483,421

VACUUM/HYDRAULIC CONTROL SYSTEM FOR SPEED SYNCHRONIZATION OF A PAIR OF SHAFTS

Kenneth M. Kennelly, Kerrville, Tex. 78028

Filed Feb. 5, 1982, Ser. No. 346,294

Int. Cl.³ B60T 1/08

U.S. Cl. 188—16 **3 Claims**

1. A supplemental braking system for a multiple wheeled motor vehicle, said motor vehicle having a common differential, a customary hydraulic brake system, a cable operated emergency brake system and a vacuum system, said supplemental system operating in cooperation with said vehicle's extant cable operated brake system for selectively slowing a spinning wheel of said vehicle, said wheel being in operative connection with said differential comprising:

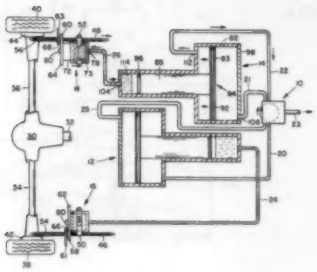
a selector valve in communication with said vehicle's vacuum system via a first vacuum conduit sized to cause a delay in said slowing of said spinning wheel;

second and third vacuum conduits selectively in communi-

cation with said selector valve and sized to cooperate with said first conduit in said delay;

first and second vacuum-over-hydraulic power means in vacuum communication with said second and third conduit, respectively;

first and second emergency brake cable actuators in fluid communication with said first and second vacuum-over-hydraulic power means via a first and second hydraulic conduit, respectively, said hydraulic conduits sized to cooperate with said first, second, and third vacuum conduits in causing said delay in said slowing of said spinning wheel, said first actuator being detachably connected to



the cable of said extant emergency brake for a first wheel and said second actuator being detachably connected to the cable of said extant emergency brake for a second wheel;

whereby an operator may gradually slow said spinning wheel of said vehicle by causing said first vacuum conduit to communicate with said first or said second vacuum conduit by positioning of said selector valve, said system having a response time delayed such that said operator may have full control of said vehicle when said slowing begins and which is unaffected by sudden changes in vacuum levels in said vacuum system.

4,483,422

LIQUID COOLED BRAKE UNIT

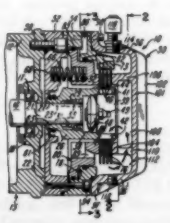
Halsey W. Cory, Fairfield, Ohio, assignor to Force Control Industries, Inc., Fairfield, Ohio

Continuation of Ser. No. 268,339, May 29, 1981, Pat. No. 4,415,067. This application Nov. 7, 1983, Ser. No. 548,933

The portion of the term of this patent subsequent to Nov. 15, 2000, has been disclaimed.

Int. Cl.³ F16D *55/36*

U.S. Cl. 188—71.5 **10 Claims**



1. An improved brake unit for quickly stopping the rotation of a shaft, said brake unit comprising a hub member having a center bore for receiving the shaft, said hub member including an annular portion spaced from the shaft and defining a liquid coolant inlet, means for rigidly ecuring said hub member to the shaft, a plurality of annular brake discs mounted on said annular portion of said hub member for rotation therewith and for axial movement relative to said hub member, said annular portion of said hub member having circumferentially spaced and generally radially extending ports connecting said inlet to the inner portions of said brake discs, a housing surrounding said hub member and receiving a liquid coolant up to at least said inlet, means connected to said housing and supporting a plurality of non-rotatable annular brake plates disposed between said brake discs in interfitting relation, said coolant being forced outwardly from said inlet through said ports and between said brake discs and plates in response to rotation of said hub member and said brake discs, an annular non-rotating actuating member supported by said housing concentrically with said hub member and for axial movement relative to said hub member, means for moving said actuating member axially to effect axial compression and release of said brake discs and plates and including a plurality of circumferentially spaced and axially extending springs for normally urging said actuating member in a direction to compress said brake plates and discs, said housing including an end section for confining the liquid coolant within said housing, and said end section of said housing having wall means defining at least one stationary passage below the axis of the shaft for directing the liquid coolant received from said brake discs and plates and collected within the lower portion of said housing to said inlet of said hub member to provide for internal recirculation of the cooler and deaerated liquid coolant within said housing in response to rotation of said annular portion of said hub member and said brake discs with the shaft.

4,483,423

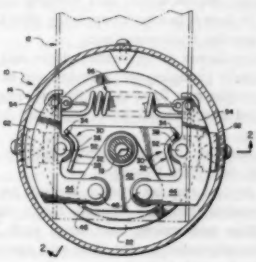
TORQUE ISOLATION DEVICE

Michael E. Renzelmann, Woodinville, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 21, 1982, Ser. No. 420,727

Int. Cl.³ F16D *67/00*

U.S. Cl. 188—134 **10 Claims**



1. A torque isolation device for a force-sensitive load having a safe force limit to be imposed thereon, configured to transmit an upstream rotational force within said limit to said load and transmit any force in excess thereof to a load-isolated path, comprising:

a. input and output shaft means disposed for semi-independent relative rotational displacement with respect to one another;

b. cam means in operative communication with one of said shaft means for driving rotation therewith, said cam means including a dwell and bidirectional, outwardly oriented camming surfaces bounding same;

c. extensible drive arm means in operative communication with the other of said shaft means and securing cam follower means in proximate engagement with said cam means to define a drive coupling between said shaft means; and,

d. biasing means for maintaining a primary transmission configuration with said cam follower means disposed within said dwell over a range of input forces below a

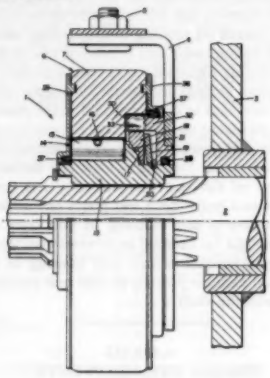
limit force and for permitting extension of said drive arm means to an overload position upon application of force in excess of said limit.

4,483,424

AUTOMATIC SLACK ADJUSTER

Ladislav Kelemen, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Feb. 28, 1983, Ser. No. 470,117
Int. Cl.³ F16D 65/56
U.S. Cl. 188—196 BA **6 Claims**



1. In a vehicle brake system, an automatic slack adjuster between the brake push rod and the brake shaft comprising:

(a) an annular housing surrounding, and coaxial with, the brake shaft;

(b) turning means within said housing engaging the brake shaft to turn it in a brake-applying direction, and having a first annular friction surface;

(c) unidirectional drive means within said housing circumferentially engaging said housing and said turning means;

(d) an annular ring fixed coaxially with respect to said housing and having axial lobes separated by circumferential spaces;

(e) an annular plate mounted rotatably on said turning means, said plate having

(1) a second annular friction surface, and

(2) circumferentially spaced tangs extending radially within said spaces, said tangs each being of smaller circumferential extent than said spaces by a predetermined angular clearance;

(f) means axially biasing said first and second annular friction surfaces into engagement; and

(g) means connecting the push rod to said housing for rotation thereof.

4,483,425

VIBRATION CONTROL SYSTEM

Wyatt S. Newman, New York, N.Y., assignor to North American Philips Corporation, New York, N.Y.

Filed Sep. 9, 1982, Ser. No. 416,535
Int. Cl.³ F16F 15/04
U.S. Cl. 188—378 **9 Claims**

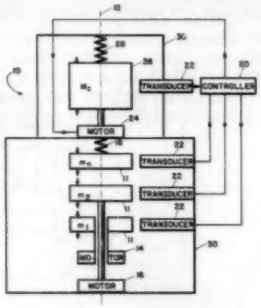
1. A vibration compensation system for actively attenuating the vibration of a machine, said machine having a housing, a linear dimension, and at least one body moving within the housing with a velocity component parallel to the linear dimension, said compensation system comprising:

a countermass capable of being linearly reciprocated relative to the housing in a direction parallel to the linear dimension;

a motor, coupled to the housing, for driving the countermass in a direction parallel to the linear dimension;

means for sensing the position, or any time derivative or time integral thereof, along the linear dimension relative to the housing of the moving body, said means producing a signal output;

means for sensing the position, or any time derivative or time integral thereof, along the linear dimension relative to the housing of the countermass, said means producing a signal output; and



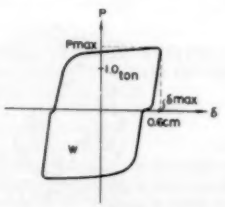
control means for supplying power to the motor in response to the signal outputs from all of the sensing means in a way that causes the acceleration along the linear dimension relative to the housing of the countermass to be in a direction opposite the acceleration along the linear dimension relative to the housing of the moving body, the magnitude of the acceleration along the linear dimension relative to the housing of the countermass being controlled to be equal to the product of the acceleration along the linear dimension relative to the housing of the moving body multiplied by its mass divided by the mass of the countermass.

4,483,426

COILED DAMPER ELEMENT

Kengo Tagawa; Toshio Nasu; Takao Yamada, all of Yokohama; Kazuo Yamashita, and Tetsuo Eto, both of Tokyo, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 333,285, Dec. 22, 1981, abandoned.
This application Apr. 27, 1984, Ser. No. 604,402
Claims priority, application Japan, Feb. 17, 1981, 56-21888
Int. Cl.³ F16F 7/04
U.S. Cl. 188—378 **3 Claims**



1. A coiled damper element for absorbing shearing forces, comprising a lead sheet and a vibration-proof sheet bonded to said lead sheet, said bonded lead sheet and said vibration-proof sheet being spirally wrapped so as to form alternate layers of a substantially circular configuration which are stacked one upon the other in the radial direction of said spiral damper element to thereby form an outer peripheral surface, an upper surface and a lower surface, said upper and lower surfaces

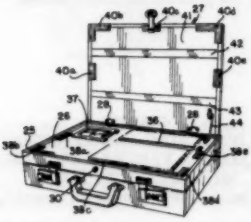
extending substantially transverse to the axial direction of said spiral damper element, and said peripheral surface conforming to the outermost layer of said spiral and extending substantially in the axial direction of said spiral damper element, said vibration-proof sheet being made of a high-polymeric material.

4,483,427

COMBINATION ATTACHE CASE AND TRAVELING DESK

Edward L. Gerch, Chicago, Ill., assignor to Kingport, Ltd., Evanston, Ill.

Filed Jan. 24, 1983, Ser. No. 460,275
Int. Cl.³ A45C 3/02
U.S. Cl. 190—11 **6 Claims**



1. In an attache case of the type characterized by box-shape sides and having an enclosable central storage area defined by opposed open mouth half-shell type members hingedly connected along one edge of each said open mouth for articulated open and closing movement therebetween, one of said opposed members defining a base and the other of said opposing members defining a lid, said box-shape sides of said lid defining a rectangular framework having a predetermined depth, and a generally flat working surface in connection with said attache case which is adapted for maintaining writing materials thereon for use as a traveling desk;

an improvement wherein

said generally flat working surface is integrally formed on said lid as a web across the interior of said framework mediate the opposed rectangular ends thereof, one of said opposed rectangular ends on said lid defining one of said open mouths for said central storage area, the other of said opposed rectangular ends defining a raised rim for said working desk surface to maintain writing, reading, or other materials positioned on said surface when said traveling desk is being used,

a cover member hingedly maintained on said lid adjacent the perimeter of said working surface, said cover providing an exterior surface of said lid and including fastener means thereon for selectively maintaining said cover in closed position over said working surface as desired, and the height of said raised rim above said working surface being greater than the thickness of said lid for providing a shallow storage space adaptable for receiving and retaining writing materials, documents, and the like therein.

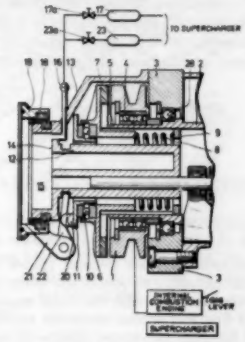
4,483,428

CLUTCH FOR WORK ARRANGEMENTS, PARTICULARLY ON INTERNAL COMBUSTION MACHINES, AND METHOD FOR ITS OPERATION

Rainer Südbeck, Duisburg, and Hans Baumgartner, Viersen, both of Fed. Rep. of Germany, assignors to Pierburg GmbH & Co., KG

Filed Nov. 6, 1981, Ser. No. 319,050
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1980, 3042164
Int. Cl.³ B60K 41/02
U.S. Cl. 192—0.07 **15 Claims**

1. Coupling for a drive device, such as an internal combustion engine, comprising a drive disc (1) having an axis of rotation, an outer circumferential surface extending around the axis, and a first end surface and a second end surface extending transversely of the drive disc axis, a rotor (2) coaxially mounted relative to said drive disc, an entraining disc (6) coaxial relative to said drive disc, said entraining disc is axially movable relative to and is connected with said rotor said entraining disc includes a first end surface and a second end surface exrtending transversely of the drive disc axis, a thrust bearing (10) mounted on said entraining disc, a thrust bearing cover (11) attached to said thrust bearing, shifting means connected to said thrust bearing cover, means forming a pressure chamber (15) including a stationary base (14), a spring (8) applying an axial biasing force against said entraining disc, and means for introducing fluid pressure into said pressure chamber, wherein the improvement comprises a housing (3) having a circumferential part relative to said drive disc axis laterally enclosing at least a part of said drive disc and an end part



covering at least a part of said end surfaces of said drive disc, said drive disc is in an annular disc, said rotor extends through said drive disc from the first end surface toward the second end surface, the first end surface of said entraining disc faces the second end surface of said drive disc, said pressure chamber means is spaced axially from the second end surface of said entraining disc and more remote from the first end surface thereof and comprises a cover extending transversely of the axis of said drive disc and movably mounted on said end part of said housing and spaced from said stationary base so that said pressure chamber is located between said cover and said base and said base is spaced axially from the second end surface of said entraining disc, said shifting means is connected to said cover for transmitting the movement of said cover via said thrust bearing cover and said thrust ring to said entraining disc for selectively coupling and uncoupling said entraining disc and drive disc.

4,483,429

DUAL FUNCTION TORQUE LIMITER/NO-BACK DEVICE

Robert K. Tiedeman, Wayne, N.J., assignor to Curtiss-Wright Flight Systems, Inc., Fairfield, N.J.

Filed Jan. 8, 1982, Ser. No. 338,044
Int. Cl.³ B60K 41/24; B60T 7/12
U.S. Cl. 192—18 R **16 Claims**

1. In a device for limiting torque and for preventing transmission of torque from a driven member comprising:

(a) a casing,

(b) an input means supported for rotation in said casing,

(c) an output means coupled to said driven member to drive the latter and supported for rotation in said casing,

(d) a first coupling means connected to said input means and output means for transmitting torque from said input means to said output means and including torque responsive means operative at a predetermined torque load to

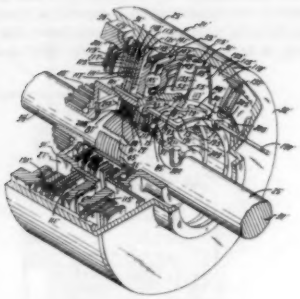
interrupt transmission of torque from the input means to the output means,

(e) brake means disposed in said casing and operative to positions of engagement and disengagement,

(f) second coupling means connected to and coacting with said first coupling means, said output means and said brake means to effect engagement of said brake means upon said predetermined torque load and for effecting engagement of said brake means upon torque transmitted from the output means, and

(g) said second coupling means includes:

(g-1) a first rotatable element connected for conjoined rotation with the output means,



(g-2) a second rotatable element spaced from said first rotatable element and connected to the input means for conjointed rotation with the input means.

(g-3) said first and second rotatable elements being supported for axial movement relative to each other, and

(g-4) cam elements disposed between and engaging said first and second rotatable elements so that, upon relative rotation of said first and second rotatable elements, such rotatable elements are axially moved relative to each other to thereby effect actuation of the brake means to the engaged position.

4,483,430

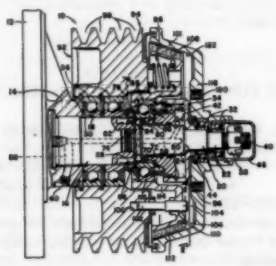
CLUTCH DRIVE

Richard W. Carmichael, Parma; James P. Koenig, Olmsted Township, and Kevin K. Johnson, Cleveland Heights, all of Ohio, assignors to The Bendix Corporation, Southfield, Mich.

Filed Mar. 9, 1983, Ser. No. 473,426

Int. Cl.³ F16D *25/08*

U.S. Cl. 192—91 A **12 Claims**



1. Clutch drive comprising a spindle having an axis, a driving member and a driven member mounted for rotation about the axis of said spindle, pressure responsive means for effecting engagement and disengagement of the driving and driven members to effect a driving connection between the driving and driven members when said members are engaged and to break said driving connection when the members are disengaged, one of said members including a portion movable parallel to the axis of said spindle toward and away from engagement with the other member, and resilient means yieldably urging said parallel movable portion into driving engagement with said other member, said one member including support mechanism for slidably supporting said parallel movable portion, characterized in that said parallel movable portion includes bearing means for providing a rotating connection between said parallel movable portion and said pressure responsive means, said bearing means being held away from the pressure responsive means to define a gap therebetween by the support provided the parallel movable portion by said support mechanism, and means connecting said bearing means for movement with the pressure responsive means.

4,483,431

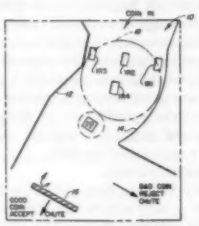
DEVICE FOR DETECTING AND REJECTING INVALID COINS UTILIZING A VERTICLE COIN CHUTE AND MULTIPLE COIN TESTS

Gary A. Pratt, Sparks, Nev., assignor to Harrah's, Inc., Reno, Nev.

Filed Oct. 13, 1981, Ser. No. 310,480

Int. Cl.³ G07D *5/02, 5/08*

U.S. Cl. 194—97 A **12 Claims**



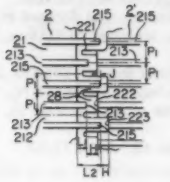
1. In a coin acceptor having a coin chute including coin entry and discharge ends and coin deflector means at the discharge end operable between coin accept and reject positions, the combination comprising first detector means disposed along said chute for detecting passage of a coin having predetermined physical characteristics, including predetermined diameter and surface reflectivity, and producing a first coin accept signal in response thereto, first circuit means including timing means responsive to said first coin accept signal for producing a timing signal of predetermined duration, second detector means disposed along said chute for detecting the topography of the side of a coin and producing a coin topography representative signal, second circuit means responsive to said timing signal for measuring said representative signal for said predetermined duration and producing an output signal when said representative signal is of a predetermined characteristic, third circuit means responsive to said output signal for operating said coin deflector means, third detector means disposed along said chute for detecting presence of magnetic material in a coin moving along said chute, said third detector means being connected to control said third circuit means to cause said deflector means to be at said deflecting position upon detection of said magnetic material, said third detector means including a permanent magnet disposed on one side of said chute and cooperating means disposed on the opposite side of said chute adjacent said magnet for measuring the Hall Effect produced by a coin moving along said chute therebetween.

4,483,432

STEPS IN AN ESCALATOR

Matsuhiko Ishida, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 23, 1981, Ser. No. 333,681
Claims priority, application Japan, Feb. 13, 1981, 56-19708
Int. Cl.³ B65B 9/12
U.S. Cl. 198—333 3 Claims



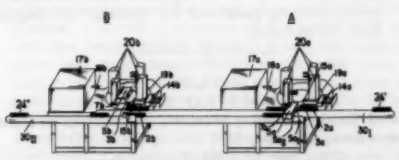
1. An escalator step comprising a tread having a plurality of cleats therein defining grooves therebetween alternating with the cleats; and a riser at one edge of said tread and having a convex surface with a plurality of projections thereon defining grooves therebetween alternating with said projections, the pitch between adjacent projections on said convex riser surface being the same as that between adjacent cleats on said tread and said projections on said convex riser surface being positioned so as to correspond to said grooves in said tread, alternate grooves in said riser being first shallow grooves and the remainder being second deep grooves, the end of said tread adjacent said riser having a profile corresponding to the first and second grooves and projections of said riser, alternate cleats on said tread being first cleats having the ends at the side opposite said riser projecting a short distance corresponding to the depth of said first grooves of said riser and being positioned to correspond to the positions of said first grooves in said riser, and the remaining cleats on said tread being second cleats having the ends at the side opposite said riser projecting a long distance corresponding to the depth of said second grooves of said riser and being positioned to correspond to the positions of said second grooves in said riser, whereby, when neighbouring said steps are disposed in a stair-like relationship or with said treads horizontal and level with each other, the projecting ends of the first and second cleats of the tread of one of said steps at the side opposite the riser always project into the grooves in the riser of the preceeding step.

4,483,433

APPARATUS FOR THE FEEDING AND REMOVAL OF WORKPIECES TO AND FROM WORK STATIONS COUPLED IN PARALLEL

Bruno Fischer, Dietikon; Angelo Andretta, Urdorf, and Manfred Nussbaumer, Dietikon, all of Switzerland, assignors to Micafil AG, Zurich, Switzerland

Filed Jan. 13, 1982, Ser. No. 339,083
Claims priority, application Switzerland, Jan. 22, 1981, 40481
Int. Cl.³ B65G 47/00
U.S. Cl. 198—339 8 Claims



1. Apparatus for feeding and removing stators for electrical machines to and from first and second stator winding machines coupled in parallel, said apparatus comprising:

first transport means for transporting unwound stators to said first and second winding machines;

second transport means for transporting wound stators from said first and second winding machines;

transfer means for each of said winding machines for transferring stators from said first transport means to the corresponding winding machine and from the corresponding winding machine to said second transport means, each of said transfer means comprising double stator receiver means displaceable between a first position thereof in alignment with said first and second transport means such that stators being transported by said first and second transport means can pass through said receiver means, a second position in which unwound stators are fed to and removed from the winding machine; and

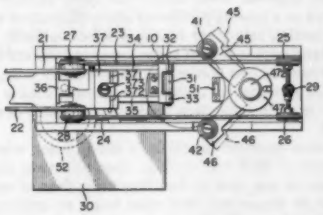
control means for controlling the transport of stators by at least one of said first and second transport means and the transfer of stators by each of said transfer means.

4,483,434

APPARATUS FOR CONVEYING SEMICONDUCTOR SUBSTRATES

Kenji Miwa, Kawasaki, and Noriyoshi Hashimoto, Yokohama, both of Japan, assignors to Nippon Kogaku K. K., Japan

Filed May 4, 1982, Ser. No. 374,773
Claims priority, application Japan, May 12, 1981, 56-71171
Int. Cl.³ B65G 47/24
U.S. Cl. 198—394 3 Claims



1. An alignment apparatus for positioning a substrate in a predetermined position, said substrate being in the shape of a plate having a generally circular periphery with a peripheral flat, said alignment apparatus comprising:

a. first, second and third roller means all of which are rotatable and have outer circumferences positioned to contact the periphery of said substrate at three different portions thereof;

b. driving means for rotating said first roller means and at least one of said second and third roller means and for thereby rotating said substrate in a predetermined direction; and

c. holding means for holding said first roller means, said holding means being displaceably biased toward said second and third roller means and having, integral therewith, means for inhibiting rotation of said substrate, said rotation inhibiting means comprising contact surface means adjacent to said first roller means, and extending toward said substrate beyond said first roller means, for contacting said peripheral flat when said substrate has a predetermined rotational position and for maintaining the rotational position of said substrate while keeping said first roller means from rotational engagement with said substrate.

4,483,435

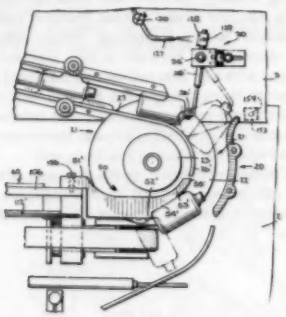
BOTTLE CONVEYING AND CLEANING APPARATUS

Alexandru D. Ionescu, Fairfield, Conn., assignor to New England Machinery, Inc., New Haven, Conn.

Division of Ser. No. 871,940, Jan. 24, 1978, Pat. No. 4,208,761. This application Oct. 11, 1979, Ser. No. 84,009

Int. Cl.³ B65G 47/24

U.S. Cl. 198—399 **4 Claims**



1. In a bottle orienting apparatus of the type having means for supplying a succession of bottles in random open-end leading and open-end trailing dispositions, mobile gripping means for frictionally engaging the opposite sides of a bottle for movement of said bottle with said gripping means along a path, and discriminating means for inverting each of said bottles which has an open-end leading disposition to open-end trailing disposition, said discriminating means including a generally vertically disposed lever having its upper portion pivotally supported on a bearing positioned above the path of movement of said bottles, said lever having a selective bottle engaging arm integral with said lever at the lower end thereof in the path of movement of said bottles, the improvement comprising:

(a) fluid jet means for directing a stream of fluid at a point of said lever in a direction generally transverse of said lever; and

(b) a vane mounted on said lever at said point, whereby said stream of fluid will impinge upon said vane and exert a force on said vane in the direction of flow of said stream, said jet means and said vane being so constructed and arranged that the force exerted by said stream on said vane will tend to move said lever about said bearing and bias said engaging arm in the upstream direction relative to the movement of said bottles.

4,483,436

TRANSPORT PALLET

Suppayan M. Krishnakumar, Nashua; Martin H. Beck, Brookline, and Ieuan L. Harry, Nashua, all of N.H., assignors to The Continental Group, Inc., Stamford, Conn.

Filed Dec. 4, 1981, Ser. No. 327,571

Int. Cl.³ B65G 49/00

U.S. Cl. 198—648 **11 Claims**

1. A pallet particularly adapted for carrying preforms in a blow molding machine, said pallet comprising an elongated flat bar, first notches formed through said bar along opposite edges of said bar at longitudinally spaced portions and in the thickness direction, support rollers seated in said first notches within the width of said bar and projecting above and below said bar in the thickness direction, second notches formed in and opening from opposite edges of said bar at longitudinally spaced intervals, guide rollers lying within the general plane of said bar within said second notches and extending outwardly from opposite sides of said bar, and preform holders extending through said bar at longitudinally spaced intervals.

4,483,437

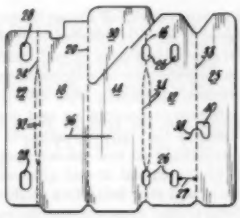
SUTURE RETAINER

Robert J. Cerwin, Pittstown, and Richard D. Marziaz, Highbridge, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Continuation-in-part of Ser. No. 506,570, Jun. 22, 1983, abandoned, which is a continuation of Ser. No. 273,804, Jun. 15, 1981, abandoned. This application Aug. 18, 1983, Ser. No. 524,264

Int. Cl.³ A61B 17/00

U.S. Cl. 206—63.3 **15 Claims**



1. A suture retainer having

a number of substantially parallel fold lines defining panels therebetween, said suture, retainer comprising:

a suture winding panel,

a first connector panel connected thereto along a fold line,

at least two suture winding pinholes in said suture winding panel, each hole being spaced from the edge of the suture panel a distance equal to at least the width of the respective pinhole,

said first connector panel having a width equal to at least the distance from the fold line to the furthest edge of the furthest pinhole in the suture winding panel,

a second connector panel connected to said first connector panel along a first fold line, said second connector panel having a width equal to the width of the first connector panel minus one-half of the width of the largest pinhole, and

a sliding panel connected to said second connector panel along a second fold line and having a width less than the width of the second connector panel and having openings placed therein such that when the second connector panel and the sliding panel are folded about the first fold line and overlie the first connector panel and the suture winding panel, openings are provided in the sliding panel wherever the sliding panel overlies a pinhole, said openings being of limited dimension such that when second connector panel and the first connector panel are folded about the second fold line and the fold line, respectively, the sliding panel is moved across the suture winding panel and the openings are displaced from the pinholes.

4,483,438

FILM STRAP WELD

Robert J. Kobiella, Rolling Meadows, Ill., assignor to Signode Corporation, Glenview, Ill.

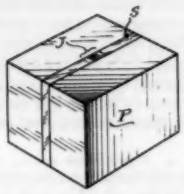
Filed Nov. 19, 1982, Ser. No. 442,523

Int. Cl.³ B65D 63/10, 19/38; B65B 13/02; B32B 7/14

U.S. Cl. 206—83.5 **8 Claims**

3. A joint in first and second overlapping portions of a ther-

moplastic thin film strap tensioned about an article, said joint comprising a plurality of elongate fused regions at the interface of said two overlapping strap portions and a plurality of elongate unfused regions separating said fused regions, said fused regions extending from the interface of the overlapping strap



portions to a depth in each overlapping strap portion of less than about 0.04 mm., said fused regions and said unfused regions being oriented lengthwise in a direction generally parallel to the strap length, said overlapping strap portions being substantially free of fused regions extending transversely of the strap length between said fused regions at said joint.

4,483,439

TWO-COMPONENT PACKAGING FOR POURABLE MEDIA

Franz Steigerwald, Griesheim, and Franz Adler, Stockstadt, both of Fed. Rep. of Germany, assignors to Wella Aktiengesellschaft, Darmstadt, Fed. Rep. of Germany

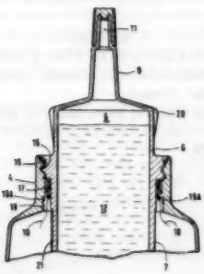
PCT No. PCT/EP82/00032, § 371 Date Sep. 20, 1982, § 102(e) Date Sep. 20, 1982, PCT Pub. No. WO82/03212, PCT Pub. Date Sep. 30, 1982

PCT Filed Feb. 18, 1982, Ser. No. 425,100

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1981, 3109921

Int. Cl.³ B65D *51/28, 81/32*

U.S. Cl. 206—219 **21 Claims**



1. A two-component packaging for pourable media, having a storage position and an operating position, comprising:

an outer container, having an inner side, and containing during the storage position, a first component of the media;

an elongated inner container, containing during the storage position, a second component of the media, said inner container being partially disposed within said outer container and being longitudinally displaceable from the storage position to the operating position, said outer container having a neck portion containing a sealing lip made of resiliently flexible material and having a free end disposed substantially parallel to the longitudinal axis of said inner container and being rigidly connected to said inner side of said outer container, said sealing lip lying closely against said inner container in a contact region and extending in said contact region outwardly from the interior of said outer container in the direction towards said free end of said lip, so as to release into the ambient possible overpressure in said outer container, said inner container also having a lateral wall with at least one projection extending radially outwardly and said outer container having a recessed stop for said projection in the vicinity of said sealing lip, so that said projection limits the longitudinal displacement of said inner container during the transfer from the storage position to the operating position, said outer container having a lateral wall and a base member having a central zone surrounded by annularly disposed projections and lying closely against said lateral wall of said inner container in the storage position, said base member being more flexible and more easily deformable than said laterial wall of said outer container, so that an overpressure in said inner container can be reduced by the deformation of said base member allowing an amount of a media to pass from said inner container to said outer container.

4,483,440

DISPOSAL DEVICE WITH DISPLAY PANELS

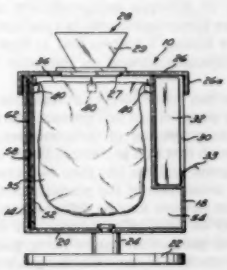
Richard L. Ware, 433 E. Hardy, Apartment A, Inglewood, Calif. 90301

Continuation-in-part of Ser. No. 160,955, Jun. 19, 1980,. This application Oct. 29, 1981, Ser. No. 316,129

The portion of the term of this patent subsequent to Nov. 20, 2000, has been disclaimed.

Int. Cl.³ B65D *83/00, 25/54, 5/72*

U.S. Cl. 206—233 **1 Claim**



1. In a waste disposal and display device, a top opening for waste disposal and the like contained within a plurality of external side walls, a floor member supporting said side walls and a removable cover member, the improvements which comprise, in combination:

one of said external side walls being provided with a recess therein;

a waste wrapper box nested within said recess;

a plurality of internal wall members parallel to and closely adjacent to the remaining external side walls, said internal wall members and said remaining external side walls defining a plurality of thin, generally vertically extending, open-ended slots for insertion therein of printed display sheets and the like;

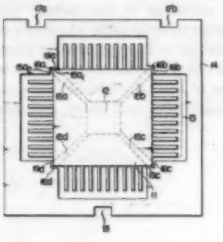
means for removably securing an inner flexible liner, in an open position, within said internal wall members; and

a support means rotatably supporting said floor member of said gum disposal device.

4,483,441
FLAT-TYPE SEMICONDUCTOR DEVICE AND PACKING THEREOF

Tetsuo Akizawa, Musashino, and Hiroshi Ishimizu, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 10, 1982, Ser. No. 356,767
Claims priority, application Japan, Mar. 26, 1981, 56-44385; Apr. 7, 1981, 56-52048
Int. Cl.[3] B65D *85/62, 73/02;* H05K *5/00;* B65B *1/08*
U.S. Cl. 206—328 13 Claims



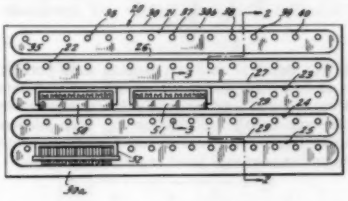
1. A packing for semiconductor devices comprising:
a plurality of flat-type semiconductor devices each having a plurality of lead wires connected to a semiconductor element and extending straight from the side surfaces of the semiconductor element;
a plurality of protection frames, a single protection frame surrounding each of the semiconductor elements and its corresponding lead wires for protecting said lead wires, each protection frame being aligned with and fixed to its respective semiconductor element and being made from the same metal plate as the lead wires so that the lead wires and the protection frame are a unitary structure;
an open container having an inner cavity for accepting the plurality of flat-type semiconductor devices and their respective protection frames in a stacked relationship, said container having a bottom and at least one longitudinal guide projection formed on the inner wall of said container;
each protection frame having at least one notch formed in the outer periphery of said protection frame for accepting said guide projection of the container, the notch being formed such that said protection frame is not symmetrical about a point and has less than two axes of symmetry so that the orientation of the plurality of the flat-type semiconductor devices may be differentiated;
the plurality of flat-type semiconductor elements and their respective protection frames being packed in said container in stacked layers with the guide projection of the container fitting within the notches of the protection frame; and
a top lid for covering said plurality of flat-type semiconductor devices stacked within said container.

4,483,442
PACKING TRAY FOR FLAT CABLE CONDUCTORS HAVING LATCHABLE COVERS

Sidney V. Worth, Flourtown, Pa., assignor to Continental-Wirt Electronics Corp., Southampton, Pa.

Filed Nov. 18, 1983, Ser. No. 553,231
Int. Cl.[3] B65D *73/02, 85/42*
U.S. Cl. 206—334 12 Claims

1. A tray for supporting electrical connectors which are connectable to flat, multi-conductor cable; said electrical connectors each comprising: an elongated insulation body of rectangular section, one side of said body having a generally flat surface having spaced contacts, adapted for piercing the insulation sheath of a flat multiconductor cable and making engagement with respective conduction of said cable, the other side of said body having respective electrical conductors connected to respective ones of said contacts, said conductors being accessible for connection at said other side of said body; a cover member having a flat cover section and a pair of legs extending from the opposite ends of said cover member and disposed in spaced parallel planes which are perpendicular to the plane of said flat cover section; and first latch means on said pair of legs and cooperating second latch means on said body, said first and second latch means being engageable for latching said cover member to said body and in a position for holding a flat cable conductor pressed between said one side of said body and the interior opposing surface of said cover member; said tray comprising a thin plastic-molded sheet having a plurality

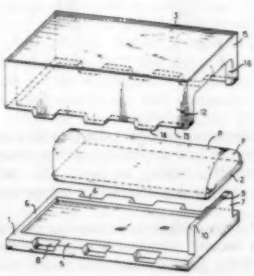


of parallel troughs; each of said troughs comprising a flat base and a pair of upstanding walls extending from said base; the depth of each of said troughs being substantially equal to the thickness of said body and of said cover member; the length of said troughs being greater than the length of at least one of said connectors; the width of said troughs being equal to the distance between the free end of either said contacts or said conductors, and the outer surface of said cover member when said cover member is placed over said body but is sufficiently spaced therefrom that said first and second latch means are not engaged, whereby said connectors are protected against the accidental engagement of said first and second latch means while they are in said tray.

4,483,443
PACKAGING BOX FOR A CHEESE

Michel Caillé, Sainte-Solange, France, assignor to Laiteries Hubert Triballat, France

Filed Oct. 12, 1982, Ser. No. 433,990
Int. Cl.[3] B65D *1/34, 6/04*
U.S. Cl. 206—459 2 Claims



1. A packaging box for a cheese comprising:
a base with an upper surface, a lateral rib and transverse ribs which define a recess;
a tray located in said recess, having a length and a width which are less than those of the recess, and having a height greater than the depth of the recess;
a transverse rib projecting upwardly substantially above said

other transverse and lateral ribs so as to form an end stop for a cheese resting on said tray;

said upper surface of said tray projecting above said ribs of said base except for the transverse rib forming said end stop;

a label holder disposed on the transverse rib constituting an end stop;

said label holder comprising a slit in the transverse rib forming said end stop;

a cover adapted to interfit with said base; and

said cover having lateral flanges, and the bottom of said flanges having integrally formed projecting castellations which engage with indented crenellations formed at a lateral border of said base.

4,483,444

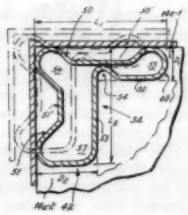
PACKAGING SYSTEM AND CORNER POST THEREFOR

Roland C. Gardner, Doylestown, Pa., assignor to Clevepost, Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 370,793, Apr. 22, 1982,. This application Jan. 21, 1983, Ser. No. 459,898

Int. Cl.³ B65D *81/02*

U.S. Cl. 206—594 **9 Claims**



1. A packaging system for a product to be protected against vertically directed compressive forces, comprising:

a rigid platform having four corners defining a first rectangle with a perimeter of predetermined dimensions, said platform having an upper surface immovably mounted relative to the base of a product to be packaged, said platform having a horizontal cross section larger than that of said product base to define a platform lip outwardly of said product base,

a container having horizontal superimposed rectangular top and bottom panels between which are positioned interconnecting vertical side walls defining four interior corners, the interior surfaces of said side walls defining a second rectangle proximate said first rectangle defined by said platform corners when said product is positioned in said container with said platform overlying said bottom panel, at least one of said vertical side walls being locatable outwardly relative to said platform perimeter to provide a gap therebetween,

a hollow corner post located proximate each interior corner of said container extending vertically between a plane containing said upper surface of said platform and a plane containing said top panel, each said post having a lower end region adjacent said platform which is provided with

(a) an outer vertical wall including a first vertical post wall section locatable adjacent said interior surface of said container side walls in the region of its respectively associated interior corner, and a second vertical post wall section inwardly spaced from said first vertical post wall section and in noncontacting relation to said interior surface of said container side walls when said first vertical post wall section is in contact with said interior surface of said container side walls, said second post wall section constituting a substantial fractional portion of said outer wall, and

(b) an inner vertical post wall spaced from and rigidly connected to said outer post wall and locatable adjacent the respectively associated vertical corner of said product when said product is located on said platform within said container overlying said bottom panel,

said inner post wall and said first and second post wall sections of said outer wall of said corner posts each being locatable to overlie said platform lip within said predetermined platform perimeter when said platform lip is at least equal to the overall thickness of said post defined by said spaced inner and outer vertical walls to distribute compressive forces applied to said posts via said top and bottom panels over the entire cross section of said posts, said inner post wall and said second post wall section of said outer post wall being locatable to overlie said platform lip within said predetermined platform perimeter when said platform perimeter is located between vertical planes containing said first and second sections of said outer post wall to distribute compressive forces applied to said post via said top and bottom panels over both said second section of said outer post wall and said inner post wall, whereby the resistance of each said post to compressive forces is not substantially reduced when said first section of said outer post wall extends outwardly beyond said predetermined rectangular perimeter defined by said platform corners to overhang said platform perimeter above said gap unsupported by said platform lip.

4,483,445

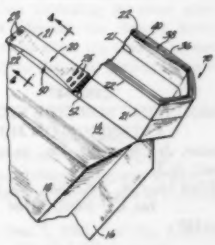
BAG WITH EASY OPENING CLOSURE AND HANDLE

J. George Lepisto, Middletown, and Paul O. Hain, Hamilton, both of Ohio, assignors to Champion International Corporation, Stamford, Conn.

Filed Sep. 30, 1982, Ser. No. 431,219

Int. Cl.³ B65D *33/06, 33/20*

U.S. Cl. 206—621 **10 Claims**



1. In a container of flexible paper material having a body portion, an opening in said body portion providing access to the container interior, and a fold-over flap for extending over and closing said opening, said flap including a free edge and opposed ends defining a width extending parallel to said free edge, said flap being attachable to said body portion by a seal, said seal extending adjacent to and generally along said opening, said seal extending the entire width of said flap and having at least first and second portions each of different bond strength defining first and second portions of said flap corresponding thereto arranged along the width of the flap, said first portion of said seal attaching said flap to said body portion with an adhesive bond strength less than that of said second portion, whereby, said flap at said seal first portion can be easily separated from said body portion to open said container, while effectively sealing the container along the entire width of said flap prior to opening;

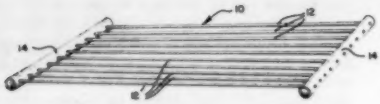
a handle on said container formed by a reverse fold of said sealed flap and means securing said second portion of said flap to said container at locations inwardly from opposed ends of said folded and sealed flap to provide a finger grip therebetween.

4,483,446

SHELF FOR A STEAM ENVIRONMENT

William R. Miller, Erie, Pa., and Peter F. Staats, Brookfield, Wis., assignors to American Sterilizer Company, Erie, Pa.

Filed Nov. 8, 1982, Ser. No. 439,860
Int. Cl.[3] A47F 5/00
U.S. Cl. 211—153 2 Claims



1. A shelf for supporting a load in a steam environment comprising:

at least one load supporting member, each said load supporting member having an upwardly facing surface and a downwardly facing surface during normal use of said shelf, said upwardly and downwardly facing surfaces being configured for such thermal efficiency that the formation of condensation is inhibited on at least one of said surfaces of each said load supporting member, said upwardly facing surface having a U-shaped cross section for retaining at least a portion of the condensation formed on said upwardly facing surface, and said downwardly facing surface being coated with a material that impedes heat flow; and

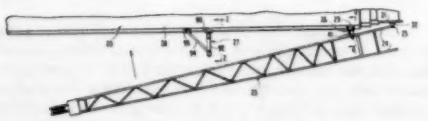
means for fixing the location of each said load supporting member within the steam environment.

4,483,447

SAFETY MOUNTING FOR SIDE STOWABLE BOOM EXTENSION OR JIB

Vincent Bernabe, Jr., Newville, Pa., assignor to Kidde, Inc., Saddle Brook, N.J.

Filed May 26, 1982, Ser. No. 382,203
Int. Cl.[3] B66C 23/66
U.S. Cl. 212—188 13 Claims



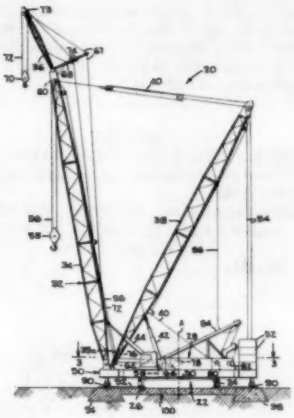
1. In a crane having a boom equipped with a side stowable jib, spaced forward and rear mounting assemblies for the jib in its stowed position on one side of the boom, a releasable connection for the base of the jib with the nose of the boom in the use position of the jib including a pivot for the jib enabling it to be swung around from the use position to the stowed position, the improvement comprising an automatically engaging safety latch having a biased pivotal mounting on said forward mounting assembly to squarely engage the jib and retain it safely in supported relationship with the forward mounting assembly during a swinging movement interval of the jib when its base is separated from the nose of the boom and prior to engagement of the jib with the rear mounting assembly, whereby the latch is able to turn with the jib during final swinging of the jib into supportive engagement with said rear mounting assembly.

4,483,448

HEAVY DUTY CRANE

Leroy L. Wittman, Marion, and Lyle B. Jensen, Cedar Rapids, both of Iowa, assignors to FMC Corporation, Chicago, Ill.

Division of Ser. No. 138,461, Apr. 8, 1980, Pat. No. 4,394,911.
This application Apr. 29, 1983, Ser. No. 489,926
Int. Cl.[3] B66C 23/62
U.S. Cl. 212—189 9 Claims



1. A method of operating a heavy duty self-propelled mobile crane on previously prepared foundations at one or more working sites with the foundations having their upper surfaces substantially at ground level, said crane being of the type including a chassis with foundation engaging propelling members, and vertically movable mobile components including a lowermost vertically movable mobile component and an auxiliary frame, said auxiliary frame mounted on the chassis for both vertical movement and rotation about a vertical axis relative to said chassis and foundation; said method comprising the steps of driving the crane onto the foundation at one of said sites, placing a steel ring having a horizontal surface on said foundation for defining therewith a rigid annular supporting surface substantially concentric with said axis, lowering the auxiliary frame and the vertically movable mobile components operatively connected thereto relative to the chassis for rotation on said ring with said foundation engaging propelling members supported on said foundation within said ring, applying a heavy load to one end of the auxiliary frame, adding sufficient counterweights to the other end of the auxiliary frame to substantially balance the weight of said load, raising the load and moving it to another location for release at said location, removing sufficient counterweights from said auxiliary frame to substantially balance said auxiliary frame after the load has been released, raising the auxiliary frame and vertically movable mobile components operatively connected thereto a sufficient distance above said foundation and relative to said chassis to provide adequate road clearance for the vertically movable crane components while driving the crane off said one site.

4,483,449

TAMPER-RESISTANT VIAL

Marcus C. Jones, 7009 Stoney Creek, Oklahoma City, Okla. 73132

Filed Jan. 10, 1983, Ser. No. 456,604
Int. Cl.[3] B65D 55/02
U.S. Cl. 215—250 21 Claims

1. A tamper-resistant enclosure assembly for a container having a dispensing opening formed therein, the container

adapted to receive a cap member for closing the opening, the enclosure assembly comprising:

detachable disc insert means positionable within the dispensing opening for substantially sealing the container such that the cap member can be secured to the container;

disc removal means secured to the detachable disc insert means for allowing removal of the disc insert means from the dispensing opening in the container; and

connector means for securing the detachable disc insert

means within the dispensing opening of the container, the connector means and detachable disc insert means cooperating such that upon removal of the disc insert means from the opening of the container an indicator signal is provided to inform a person that the detachable disc insert means has previously been removed, the connector means comprising a stem element having a first end portion and an opposed second end portion, connected to the container such that the opposed second end portion is detachably connected to the detachable disc insert means.

4,483,450

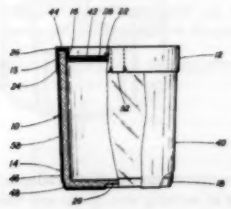
CONTAINER AND REMOVABLE LID THEREFOR

Gil Sanchez, RFD 4-1033, Bayamon P.R. 00619

Filed Nov. 14, 1983, Ser. No. 551,070

Int. Cl.³ B65D *41/32*

U.S. Cl. 215—254 **19 Claims**



1. A container lid comprising:

a top surface having a raised convex center;

an upstanding inner wall at the periphery of said surface;

a top wall extending from said inner wall and connecting said inner wall to a depending outer flange of greater length and forming a space therebetween adapted to fit on the rim of a container;

said inner wall and said surface forming a dished configuration; and

a plurality of spaced scored sections radiating at extended intervals from said center along said top surface part way down said outer flange and terminating in a tab for removing said lid from a container.

4,483,451

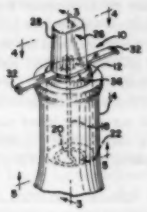
BOTTLE CLOSURE DEVICE

Florian J. Gorski, 18324 Berkhamstead, Orland Park, Ill. 60462

Filed Dec. 17, 1982, Ser. No. 450,798

Int. Cl.³ B65D *39/16*

U.S. Cl. 215—296 **7 Claims**



1. A closure device adapted to be attached to a cork used to seal a bottle, the improvement comprising:

cork attachment means formed of a single piece of wire and formed to provide a shaft adapted to be inserted into and through the cork; and including a threaded extension to protrude upwardly from the cork;

said cork attachment means also including a pointed top and also including a bottom connected with the shaft to assist in urging the pointed top of said shaft into the cork before said bottom comes into contact with the cork;

cap means including a top with a hollow chamber to receive the pointed top of the shaft and also including a twist-grip finger means with threaded means and located between the top and the cork and adapted to be connected to the threaded extension of the shaft, and, said twist grip finger means having portions extending outwardly of the cork to be grasped when threading the twist grip finger means onto the shaft whereby the closure device may be attached to a cork to allow the cork to be easily re-inserted and removed from the associated bottle without breaking into pieces.

4,483,452

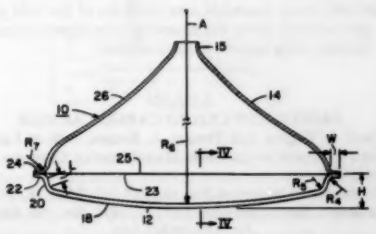
TELEVISION BULB

Wendell S. Blanding, Painted Post, and Robert V. VanDewoestine, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Dec. 7, 1981, Ser. No. 328,138

Int. Cl.³ H01J *61/30*

U.S. Cl. 220—2.1 A **57 Claims**



1. A panel for a television bulb comprising a central viewing section, sloping sidewall portions and peripheral flange means extending circumferentially about outer end portions of said sloping sidewall portions; first radius means (R_6) for forming said central viewing section having a center along an axis extending centrally of said panel and perpendicular to a central portion of said viewing section, second radius means (R_5)

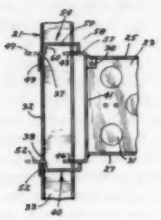
tangentially connecting with said central viewing section and said sloping sidewall portions, third radius means (R_4) tangentially connecting with said sloping sidewall portions and said peripheral flange means; said panel having an inner surface and an outer surface which extend along said central viewing section, said sloping sidewall portions and said peripheral flange means; said peripheral flange means having a circumferential sealing surface portion about the inner surface thereof, said viewing section of said panel being defined as the area inside the locus of points defined by the tangency of said first radius means (R_6) and said second radius means (R_5) on the inside surface of said panel, said viewing section having a diagonal dimension defined as the length of the viewing section taken on a diagonal across the inner surface of said panel, and said panel having a substantially uniform thickness across its extent of between about 0.75% and 2% of said diagonal dimension.

4,483,453

ELECTRICAL RECEPTACLE BOX ASSEMBLY

Robert A. Smolik, 670 W. Seventh St., St. Paul, Minn. 55102

Filed Sep. 8, 1983, Ser. No. 530,236
Int. Cl.³ H02G 3/10
U.S. Cl. 220—3.5 **17 Claims**



1. An electrical receptacle box assembly, comprising:
a box-like housing for accommodation of an electrical receptacle;
a wall stud of the type having a major side member with a relatively thin wall thickness, said major side member being provided with a plurality of mounting holes describing a hole pattern;
a set of plurality of linear bendable mounting tabs fixed at one end to the housing and extended outwardly from the housing with other ends describing a pattern corresponding to the hole pattern on the major side member of the wall stud;
said tabs being insertable into the holes of the hole pattern and bendable about the mounting hole edges to secure the housing with respect to the wall stud.

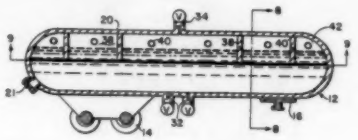
4,483,454

BAFFLE FOR LIQUID CARGO CARRIER

Thelmer A. Rogers, and Thomas A. Rogers, both of Lubbock, Tex., assignors to Lubbock Manufacturing Company, Lubbock, Tex.

Continuation-in-part of Ser. No. 778,983, Mar. 18, 1977, abandoned. This application Dec. 27, 1977, Ser. No. 864,784
Int. Cl.³ B65D 7/02
U.S. Cl. 220—5 A **2 Claims**

1. In a tank for transporting a compressed liquified gas product,
a. said tank having an arcuate shell,
b. a manhole entering into the bottom half of said tank through said shell,
c. a compressed liquified gas product in said shell with
(i) the liquid phase of the product filling a majority of the tank,
(ii) the gas phase thereof filling the remainder of the tank, and
(iii) the two phases in fluid communication with each other and having an interface therebetween; the improved baffle structure to prevent surging of the liquid comprising:
d. a rigid baffle in the form of a horizontal plate rigidly fixed to the shell,
e. at least part of the baffle below the liquid-vapor interface,
f. small vapor vents in said baffle,
g. at least 90% of the liquid phase below the baffle,



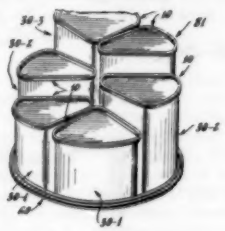
h. at least 95% of the vapor phase above the baffle, and
h. an open passageway to the manhole below the baffle,
k. said tank
(i) mounted on wheels with
(ii) a trailer hitch,
m. so that the tank forms a part of a trailer adapted to be towed on highways,
n. said shell being cylindrical and
o. said baffle being a segment of a cylinder with the axis of the shell and baffle parallel.

4,483,455

FOOD STORAGE CONTAINER SYSTEM

Wilson B. Prophet, Jr., South Norwalk; William G. Wolfe, Riverside, and Thomas J. Simmons, Weston, all of Conn., assignors to The Carousel Group, Inc., East Norwalk, Conn.

Filed Aug. 20, 1982, Ser. No. 409,874
Int. Cl.³ B65D 21/02
U.S. Cl. 220—23.83 **11 Claims**

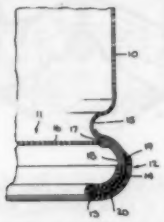


1. A food container storage system adapted to store a variety of food items of varying size, shape and volume with a maximum volume for the area occupied with instant accessibility comprising:
a semi-circular tray shelf having a central elevated web located centrally and extending downwardly from along the diameter of said shelf;
a pair of elevated, equally spaced radial fingers extending from said web forming three sector-shaped compartments in said tray shelf;
an elevated arcuate rim on the circular periphery portion of said semi-circular shelf forming an arcuate retainer for said compartments;
a plurality of sector-shaped containers positioned in said compartments; and
bracket mounting means for mounting said shelf on a wall or other vertical surface.

4,483,456
SALVAGEABLE INDUSTRIAL CONTAINER

Harry W. Mays, Merced, Calif., assignor to Rheem Manufacturing Company, New York, N.Y.

Filed Jan. 18, 1982, Ser. No. 340,050
Int. Cl.³ B65D 6/36, 8/10
U.S. Cl. 220—67 2 Claims

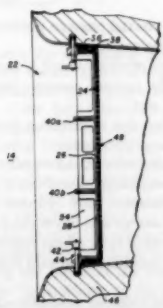


1. An industrial container of malleable material comprising in combination a cylindrical shell and at least one end closure, characterized in that said shell and end closure are joined at one end of said shell by a circumferential seam in which said shell commencing at the shell rim within said seam and traveling away from said rim in the longitudinal direction of said container has a curled circumferential portion that follows the radially outer portion of a toroidal surface centered on the longitudinal axis of said shell until it merges with a radially inwardly directed circumferential groove whereby a longitudinal section through said shell appears S-shaped at said one end, said end closure is set within said curled portion of said shell and includes a central portion merging at its periphery with a seam forming portion that closely follows from the boundary of said central portion to the rim of said closure first the radially inner surface of said curled portion of said shell toward the said shell rim and is then cuffed radially outwardly back and over the radially outer surface of said curled portion terminating short of said circumferential groove, and said seam forming portion is closely embraced by a circumferential chime ring wherein the radially outer portion of said ring extends in the longitudinal direction of said shell beyond the rim of said end closure and radially inwardly into said circumferential groove.

4,483,457
HINGED STEAM GENERATOR NOZZLE PLUG

Glen E. Schukei, South Windsor, Conn., and Lee A. Tade, III, Hixson, Tenn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Mar. 31, 1983, Ser. No. 480,972
Int. Cl.³ F16L 55/12
U.S. Cl. 220—232 6 Claims



1. In a steam generator for use in a nuclear power generating system, said steam generator having at least one nozzle through which fluid enters or exits said steam generator, and an access port providing communication into the interior of said steam generator, said access port further having a smaller passage area than said nozzle, an improved nozzle plug for effecting a temporary fluid tight seal within said nozzle, comprising:

a plurality of sections of plate configured to cooperatively form a plug having a cross sectional area substantially the same as said nozzle, said sections of plate further each including a raised sidewall secured about the outer edge for providing flexural strength thereto and for supporting a membrane formed of a leak proof material having an inflatable sealing bead between the sections of plate and the nozzle;

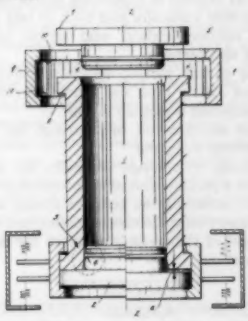
means, secured to the corresponding sidewall of each of adjacent sections of plate, for hinging said adjacent sections of plate, said hinge means allowing the sections of plate to be altered from an extended state, wherein the sections of plate embody a cross sectional area equivalent to the cross sectional area of said nozzle, and a folded state, wherein the sections of plate may be passed through said access port into said steam generator without disassembly into separate components;

means for securing said plurality of sections of plate when in the extended state within the nozzle in blocking relation to the flow of liquids therethrough, said securing means operating cooperatively between the sections of plate and the nozzle.

4,483,458
CLOSURE SYSTEM FOR PRESSURE VESSELS

Rudolf Minning, Dortmund; Heribert Dierkes, Hagen; Jörg-Peter Körner, Hagen, and Peter Saamer, Iserlohn-Hennen, all of Fed. Rep. of Germany, assignors to Uhde GmbH, Dortmund, Fed. Rep. of Germany

Filed May 13, 1983, Ser. No. 494,423
Claims priority, application Fed. Rep. of Germany, May 12, 1982, 3217819
Int. Cl.³ B65D 45/32
U.S. Cl. 220—320 4 Claims



1. A closure system for a pressure vessel, the pressure vessel including an open ended housing having an axis and provided with a first rim portion adjacent the open end thereof, and a cover adapted to be sealingly coupled to the housing to close the open end, the cover provided with a second rim portion adjacent the first rim portion of the housing, said closure system comprising:

at least one clamp member having a channel formed therein for receiving at least a portion of the first and second rim portions of the pressure vessel to maintain the cover sealingly coupled to the open end of the housing; and

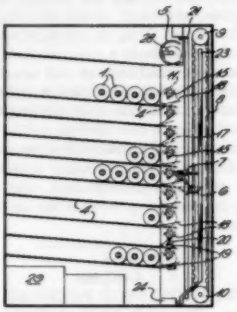
tensible means for mounting said clamp member for axial movement reltive to the pressure vessel to permit limited axial movement of said clamp member relative to the

housing when the pressure vessel is pressurized, said tensible means adapted to position said clamp member at a predetermined zero pressure axial position when the pressure vessel is depressurized.

4,483,459
DISPENSING MACHINE

Michael Taylor, Lower Norton; Malcolm D. N. Withnall, Morton Morrell, and Michael A. Talbot, High Wycombe, all of England, assignors to Mars Limited, London, England

Filed Jul. 22, 1982, Ser. No. 400,612
Claims priority, application United Kingdom, Jul. 24, 1981, 8122996
Int. Cl.³ G07F *11/00*
U.S. Cl. 221—14 **14 Claims**



1. A dispensing machine for dispensing selected articles comprising:

an article storage means having a plurality of vertically-spaced parallel-inclined shelves each capable of feeding articles to a pick-up station at the lower end of the shelf, said pick-up stations being arranged vertically;

an article carrier capable of supporting one or more articles;

a carriage movable vertically past each of said pick-up stations to a delivery station, said article carrier being mounted on said carriage;

a movable stop at each pick-up station selectively operable to release an article onto the article carrier when the carriage is adjacent a pick-up station;

actuator means mounted on the carriage for actuating a selected movable stop; and

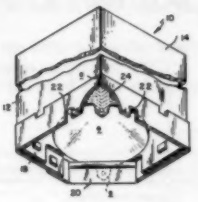
means for moving the carriage vertically, for causing it to stop adjacent a pick-up station from which an article is to be taken, for actuating the actuator means whereby the article is released onto the article carrier, and for continuing movement of the carriage to place the article at the dispensing station.

4,483,460
DISPENSER FOR CONICAL STRAINERS

James P. Whelan, N. Marshfield, Mass., assignor to Ad-Tec Products, Inc., Plymouth, Mass.

Filed Dec. 16, 1982, Ser. No. 450,561
Int. Cl.³ A47F *1/08*
U.S. Cl. 221—303 **3 Claims**

1. A dispenser for conical strainers having diametrically-projecting ears comprising means defining a vertically-elongate structure of rectangular cross section open at its lower end and of a predetermined cross section such that the distance between opposite corners exceeds the distance between the ears at the diametrically-opposite sides of the strainers to be dispensed and the distance between opposite sides is at least the diameter of the rims, means at the lower open end comprising a rigid band of rectangular configuration fixed externally to the lower end defining rigid supports internally of the structure comprising a diagonally-disposed support at one of the corners and diagonally-spaced supports at the other of the corners and wherein the supports are positioned at a radial distance from

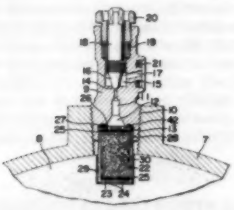


the axis of the structure which is less than the radius of the rim of the strainers such as to collectively define a three point support for the rims of the strainers positioned in the structure.

4,483,461
FLASH-BACK ARRESTOR FOR DISSOLVED ACETYLENE CYLINDERS

Tadasu Igarashi, Yamagata, Japan, assignor to Nihon Coyne Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 6, 1981, Ser. No. 280,282
Claims priority, application Japan, Dec. 25, 1980, 55-187299[U]
Int. Cl.³ B65D *25/38*; B67D *5/32*
U.S. Cl. 222—3 **3 Claims**



1. A holder for dissolved acetylene comprising a container having a threaded opening therein and a mass of wetted porous material in the container for stabilizing acetylene charged thereinto, said holder being characterized by:

A. a valve body threadedly secured in said opening and having therein

(1) a substantially coaxial passage portion which opens to the interior of the container,

(2) another passage portion which is communicated with said substantially coaxial passage portion and which opens outward, and

(3) a valve member for controlling communication between said passage portions;

B. a cylinder coaxially secured to an inner portion of said valve body and projecting therefrom a distance into the interior of the container, said cylinder defining a flash-back arrester gas passage and having opposite gas permeable end walls to permit flow of gas therethrough between the interior of the container and said substantially coaxial passage portion;

C. a filter plate in said cylinder inwardly adjacent to each of said gas-permeable end walls thereof; and

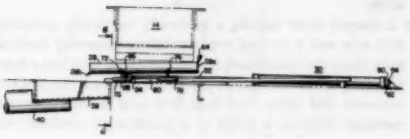
D. a packing of granular material in the cylinder, between said filter plates.

4,483,462

WATER GUARD

Lawrence T. Heintz, Covington, La., assignor to Texas Industries, Inc., Dallas, Tex.

Filed Jul. 7, 1982, Ser. No. 396,066
Int. Cl.³ G01G 17/04
U.S. Cl. 222—63 18 Claims



1. A method of operation for a water guard wherein a vehicle is loaded with bulk material passed through a gate from a storage bin and wherein there tends to be water leakage through said gate, the method comprising the steps of:

positioning a trough supported by left and right downward extending skids which slide on parallel rails to beneath said gate, when said gate is closed, to receive water leaking through said gate wherein said parallel rails are positioned below and offset on opposite sides from said gate; and

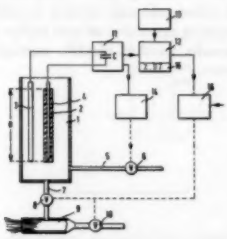
retracting said trough from beneath said gate to permit said gate to open and pass said bulk material to said vehicle between said parallel rails.

4,483,463

APPARATUS FOR DISPENSING VERY SMALL QUANTITIES OF LIQUID

Gerhard Buschmann, Dusseldorf, Fed. Rep. of Germany, assignor to Jagenberg AG, Dusseldorf, Fed. Rep. of Germany

Filed Jul. 30, 1982, Ser. No. 403,609
Claims priority, application Fed. Rep. of Germany, Oct. 12, 1981, 3140485
Int. Cl.³ B67D 5/08
U.S. Cl. 222—64 7 Claims



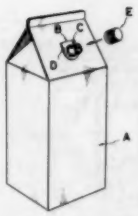
1. In an apparatus for dispensing small amounts of liquid having a measuring vessel which is fillable between a maximum and minimum liquid level with a liquid to be dispensed, a means receptive of the liquid from the measuring vessel for ejecting a partial quantity and means for sensing the liquid level in the measuring vessel and for producing a signal when the minimum liquid level is reached to effect refilling and a signal when the maximum liquid level is reached to effect a termination of filling, the improvement wherein: the sensing means comprises a capacitor extending over at least the range of the variable liquid level in the measuring vessel between the minimum and maximum levels, with the dielectric of the capacitor comprising the liquid in the measuring vessel, means for measuring the capacitance of the capacitor comprising means for comparing the measured values after each emission of liquid to determine the quantity of liquid dispensed as a function of the change and regulating means responsive to the actual volume of liquid dispensed as determined by the comparing means for adjusting the ejecting means to dispense a preselected volume when the actual volume differs from the preselected volume.

4,483,464

CONTAINER WITH A POURING SPOUT

Toshiaki Nomura, Takatsuki, Japan, assignor to Toppan Printing Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 197,603, Oct. 16, 1980, abandoned.
This application May 13, 1982, Ser. No. 377,848
Int. Cl.³ B67B 7/26
U.S. Cl. 222—83 8 Claims



1. A container with a pouring spout, comprising a container body having a hole of a desired size bored in a predetermined part of the container body, an inner surface of said container body being coated with a thermoadhesive plastic film; a seal, including a thermoadhesive plastic film, adhered to said inner surface of said container and covering said hole; a pouring spout body, having a longitudinal groove formed in an inner wall of said pouring spout body, a flange extending radially outwardly from a lower end of said pouring spout body and adhered directly to an outer surface of said container around said hole, and a notch formed in an upper end of said pouring spout body; an inner spout tightly inserted but longitudinally slidable in said inner wall of said pouring spout body, said inner spout including a pouring channel, an air inlet separated from said pouring channel by a wall, a projection slidably received in said longitudinal groove of said pouring spout body, said projection cooperating with said groove to maintain a preselected angular position of said inner spout relative to said container, said angular position being selected such that said air inlet is maintained above said pouring channel during a normal pouring operation, and a rim projecting radially outwardly from said inner spout and slidably received in said notch of said pouring spout body, said rim cooperating with said notch to limit the downward movement of said inner spout relative to said pouring spout body; and a cap placed over said upper end of said pouring spout body.

4,483,465

FLUIDIC SUBSTANCE DISPENSING VALVE

David Lawrence, Billerica, Mass., assignor to Automation Associates, Inc., Billerica, Mass.

Filed Aug. 5, 1981, Ser. No. 290,343
Int. Cl.³ B67B 7/26; B65D 47/10
U.S. Cl. 222—83.5 27 Claims

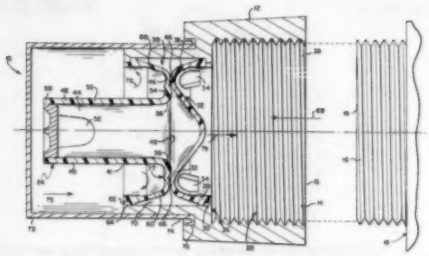
1. A valve for dispensing fluidic substance comprising means defining a valve housing adapted for connecting with a source of fluidic substance and including a chamber for accommodating incoming fluidic substance driven by gravity, pressure or the like, and defining a general axial flow path thereof through said housing,

diaphragm means disposed in said valve housing chamber substantially transverse to said axial flow path and sealingly engaging the wall of said chamber so as to define first and second compartments therein,

said diaphragm means having a surface facing away from

said flow path which includes an annular rib and further having at least one aperture disposed through said diaphragm means in a peripheral arrangement outside of said annular rib for allowing passage of fluidic substance from the first compartment to the second compartment,

a tubular seal mounted to said valve housing and having an inner end which opens to face the annular rib of said diaphragm means and an outer end, said seal comprising a first tube section extending inwardly from said outer end, a second tube section interconnected to the first section and including at least one lobe protruding from the inside wall thereof, and an annular lip interconnected to the second tube section and defining the inner end of said tubular seal,



said tubular seal further including pivot means for enabling the second tube section and annular lip to annularly pivot relative to the first tube section and resilient means urging said tube axially outward so that said annular lip sealingly engages said annular rib of said diaphragm means,

said tube being movable axially inward against said resilient means, said lip and second tube section annularly pivoting to enable the lobes of said second section to engage said annular rib thereby breaking sealing engagement between said diaphragm means and said tubular seal so that fluidic substance in said second compartment is permitted access to the bore of said tube,

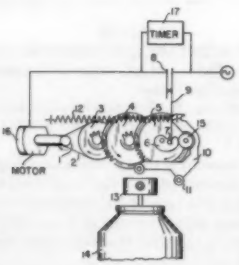
the outer end of said tubular seal having at least one orifice for dispensing fluidic substance therefrom.

4,483,466

APPARATUS FOR AUTOMATICALLY OPERATING THE DISCHARGE VALVE OF A PRESSURE CONTAINER

Arturo Martin Gutierrez, Doce De Octubre, 3.-Madrid, Spain (9)

Filed Feb. 23, 1982, Ser. No. 351,362
Claims priority, application Spain, Feb. 26, 1981, 256,473
Int. Cl.³ G04C *23/48*
U.S. Cl. 222—647 **1 Claim**



1. An apparatus for operating automatically the discharge valve of a pressure container for dispensing therefrom liquid or vapor products, said apparatus comprising:

a shaft;

an electric motor operable for rotating said shaft about the axis thereof;

a speed reduction unit including a plurality of meshing gears;

belt means for transmitting rotation of said shaft to a first said gear, whereby meshing of said gears results in rotation of a last said gear at a speed slower than the rotation of said first gear;

an eccentric cam fixed to said last gear and rotatable therewith;

an L-shaped lever having a generally vertically extending first arm and a second arm extending generally horizontally from the lower end of said first arm, said lever being pivotally mounted about a pivot axis adjacent the juncture between said arms, and said first arm having rotatably mounted thereon a roller at a position to confront said cam;

spring means acting on the upper end of said first arm for urging said lever about said pivot axis in a direction to urge said roller into contact with said cam and to cause the free end of said second arm to move downwardly;

timer means, electrically connected to said motor, for transmitting thereto at predetermined time intervals electric current pulses, thereby for causing said shaft and said gears to rotate, and thereby for causing said cam to rotate from a start position, whereat said lever is maintained by said cam at an orientation with said free end of said second arm in a raised position adapted to be spaced above a discharge valve of a pressure container, to an actuating position, whereat said spring means pivots said lever about said pivot axis and moves said free end of said second arm downwardly to a position adapted to depress the discharge valve;

electric switch means, in an electric circuit for supplying current to said electric motor and including a movable element, for opening and closing said circuits; and

pin means mounted on said cam at a position for contacting said element and opening said circuit when said cam is at said start position, for releasing said element and closing said circuit when said cam moves to said actuating position, and for contacting said element and again opening said circuit when said cam returns to said start position, thereby stopping operation of said motor until said timer means transmits another electric current pulse to said electric motor.

4,483,467

EXPANDABLE FABRIC MOLD

John E. Hostetler, Bettendorf; William H. Hulsebusch, DeWitt, and I. Weir Sears, Jr., Davenport, all of Iowa, assignors to Apparel Form Company, Davenport, Iowa

Filed Jul. 21, 1982, Ser. No. 400,455
Int. Cl.³ D06C *5/00*
U.S. Cl. 223—74 **29 Claims**

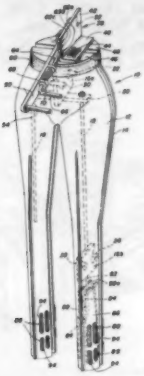
1. An apparatus for use in forming a fabric shell into a predetermined three-dimenional shape, comprising:

a contoured mold having at least two movable parts extending throughout substantially the entire fabric shell;

means for moving said mold parts between a retracted position and an expanded position; and

means at spaced positions on said mold for multidirectional

holding of a fabric shell placed over said mold in fixed position on said mold to prevent movement of the fabric



shell relative to said mold in opposed directions when said mold parts are in said expanded position.

4,483,468

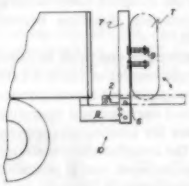
UNIVERSAL SPARE TIRE MOUNT FOR VEHICLES

Gary B. Lucas, Rte. 4 Box 638, Chio, Calif. 95920

Filed Aug. 9, 1979, Ser. No. 65,044

Int. Cl.³ B62D *43/02*

U.S. Cl. 224—42.06 **6 Claims**



1. A spare tire mount for vehicles comprising in combination:

a frame member attached to a vehicle bumper having a pivot fixed at one point thereon, said frame member contoured to nest against a first vertical and a second horizontal face of the bumper,

a swing arm member having an elongate slot along a lower extremity of its length, constrained for rotation by said pivot extending through said slot,

and releaseable locking means extending through said frame member and said swing arm which in conjunction with said pivot, lock said swing arm in one of two fixed positions:

a first position in which said swing arm is substantially in a vertical plane and has said lower extremity flush with a vertical portion of said frame member,

and a second position in which said swing arm is substantially in a horizontal plane and has said lower extremity flush with an horizontal portion of said frame member.

4,483,469

CONVERTIBLE CARRIER BAG

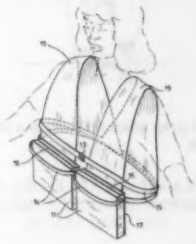
Björg Arisland, 102 Dorchester Blvd., St. Catharines, Ontario L2M 6V2, Canada

Continuation of Ser. No. 436,737, Oct. 26, 1982, abandoned, which is a continuation of Ser. No. 202,745, Oct. 31, 1980, abandoned, which is a continuation-in-part of Ser. No. 177,366, Aug. 11, 1980, abandoned. This application Apr. 4, 1984, Ser. No. 596,080

Claims priority, application Norway, Aug. 15, 1979, 792657

Int. Cl.³ A41D *1/04*; **A45C** *9/00*

U.S. Cl. 224—151 **3 Claims**



1. A carrier bag which is convertible between a garment supported configuration and a hand supported configuration comprising:

(a) a pair of pouches,

(b) means for releasably securing said pouches in a face-to-face relationship defining a vest storage compartment therebetween,

(c) a vest adapted to fit a human torso, said vest comprising a pair of shoulder straps, each having one end secured to one of said pouches, and having a sufficient extent to extend upwardly therefrom over the shoulders of the wearer, and means for securing the other ends of the shoulder straps in a position to releasably retain the shoulder straps on the wearer whereby each pouch may be suspended from the vest in close proximity to the torso of the wearer in use when said means for releasably securing said pouches is released, said vest being adapted to fit within said vest storage compartment so that the pouches may assume a handbag configuration when in said face-to-face relationship, said shoulder straps each having a front end and a back end, the front end of each strap being secured one to each pouch, said means for securing the other ends of said shoulder straps comprising tie straps connected to the back end of the shoulder straps and having a sufficient length to extend around the wearer to be releasably connected in front of the wearer.

4,483,470

CONVERTABLE SLING-BELT SNAPPER FOR CARRYING ROLLER SKATES AND THE LIKE

Raymond H. Cousins, Cincinnati, Ohio, assignor to Leonard Williamson, Cincinnati, Ohio

Continuation of Ser. No. 150,387, Jul. 1, 1980, abandoned. This application Dec. 16, 1981, Ser. No. 331,231

Int. Cl.³ B65D *63/00*

U.S. Cl. 224—257 **4 Claims**

1. A convertable sling-belt including:

(a) a longated strap made of flexible material;

(b) a pair of clamp means, one of said clamp means being attached to one end of said strap and the other clamp means being attached to the other end of said strap, said clamp means being adapted to secure and hold a pair of roller skates, one skate on each end of said strap, for transporting;

(c) mating buckling members for buckling the strap around the waist of a user to wear the strap as a belt; and

(d) whereby said strap when said clamping means are clamped onto said skates is useful as a sling; and

(e) wherein said strap has an integral shoulder pad portion centrally located between said clamping means; and

(f) whereby said strap when not used as a sling is convertable to a waist belt.

4,483,471

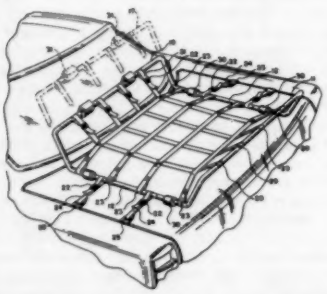
CARGO CARRIER

Gildo G. Prosen, 5356 N. Washtenaw, Chicago, Ill. 60625

Filed Mar. 3, 1983, Ser. No. 459,323

Int. Cl.³ B60R *9/04*

U.S. Cl. 224—314 **14 Claims**



1. A device for carrying loads comprising:

a plurality of interengaging tubular members which form a continuous, generally rectangular perimeter means, one first pair of parallel sides of said perimeter means being generally disposed in a single plane, and the other pair of parallel sides of said perimeter means being vertically and upwardly displaced from said first pair, and disposed in either one or two planes parallel to the single plane of said first pair; and

a means for placing said interengaging tubular members in compression, comprising at least two straps, a first strap being of predetermined length and engaging the first pair of parallel sides, and a second strap being of variable length and engaging said second pair of parallel sides, said straps being placed such that said first strap is on top of said second strap at their intersection;

wherein, when said second strap is placed under tension, it causes said first strap to be bowed upwards and also placed under tension, and wherein placing said straps under tension thereby causes said perimeter means to be placed under compression and to become rigid.

4,483,472

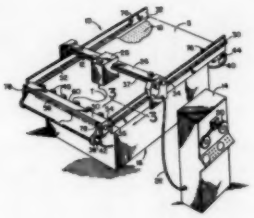
APPARATUS AND METHOD FOR INDEXING SHEET MATERIAL

Heinz J. Gerber, West Hartford, Conn., assignor to Gerber Scientific Inc., South Windsor, Conn.

Filed Mar. 1, 1983, Ser. No. 471,131

Int. Cl.³ B65H *25/26*

U.S. Cl. 226—16 **14 Claims**



1. In an apparatus having a table defining a support on which sheet material is spread in first and second coordinate directions, an instrument for working on the sheet material spread over the table, the instrument being mounted on a first motor-controlled carriage spanning the table in the second coordinate direction and mounted on a first set of ways extending in the first coordinate direction for controllable movement back and forth parallel to the support surface and relative to the sheet material for accurate positioning and working on the sheet material, the improvement comprising:

indexing means for moving the sheet material in the first of the two coordinate directions between different work positions on the table and including a second carriage also spanning the table in the second coordinate direction parallel to the first carriage and mounted to the table on a second set of ways different from but parallel to the first set for movement in the first coordinate direction, means for coupling the second carriage and the sheet material together and drive motor means connected in driving relationship with the second carriage for moving the carriage and the coupled sheet material over the table in the first coordinate direction between different work positions; and

stop means mounted to the table in noninterfering relationship with the movement of the first carriage on the first set of ways and engagement means connected for movement with the second carriage and operatively associated with the stop means for limiting the movement of the second carriage and the coupled sheet material in the first coordinate direction between work positions on the table to a fixed and predetermined amount.

4,483,473

PORTABLE GAS-POWERED FASTENER DRIVING TOOL

Mohamed K. Wagdy, Des Plaines, Ill., assignor to Signode Corporation, Glenview, Ill.

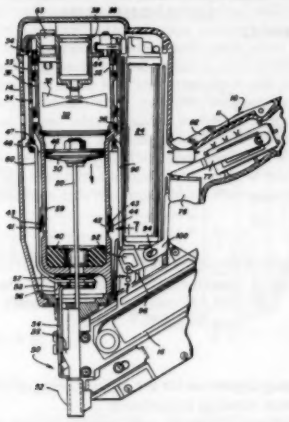
Filed May 2, 1983, Ser. No. 490,408

Int. Cl.³ B25C *1/04, 1/08*

U.S. Cl. 227—8 **4 Claims**

1. A portable fastener driving tool comprising a housing, a main cylinder in said housing, a piston in said main cylinder and movable from a driving to a driven position, a driver attached to said piston, a magazine for supplying fasteners into position to be driven by said driver, a combustion chamber within said housing having a wall portion defining a plurality of openings and said piston as a wall portion thereof, a fan in said combustion chamber and controls therefor to operate same to cause turbulence in said chamber, means for controlling the flow of gases into and out of said combustion chamber, a work sensitive probe assembly cooperating with said means

for controlling the flow of gases whereby the combustion chamber is not closed off until the tool is in position to drive a fastener into a work-piece, means for providing fuel into said combustion chamber and igniting same for driving said piston to drive a fastener and trigger operated means responsive to movement of said means for controlling the flow of gases into and out of said combustion chamber whereby the tool cannot



be fired until the combustion chamber is closed and the chamber cannot be opened until the trigger is released, and the improvement wherein the wall portion of the combustion chamber is fixed relative to the housing and said means for controlling the flow of gases includes a slidable member disposed adjacent said openings, movable relative to said combustion chamber, and secured to said probe assembly.

4,483,474

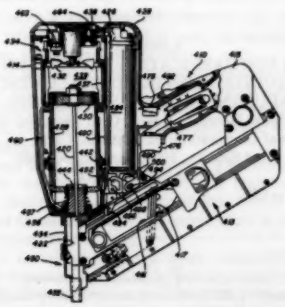
COMBUSTION GAS-POWERED FASTENER DRIVING TOOL

Milovan Nikolich, Chicago, Ill., assignor to Signode Corporation, Glenview, Ill.

Continuation-in-part of Ser. No. 227,194, Jan. 22, 1981, Pat. No. 4,403,722. This application May 2, 1983, Ser. No. 490,409

Int. Cl.³ B25C *1/04, 1/08*

U.S. Cl. 227—8 **5 Claims**



1. A portable fastener driving tool comprising a housing, a main cylinder in said housing, a piston in said main cylinder and movable from a driving to a driven position, a driver attached to said piston, a magazine for supplying fasteners into position to be driven by said driver, a combustion chamber formed within said housing and having said piston as one wall thereof, a fan in said combustion chamber and controls therefor to operate same to cause turbulence in said chamber, a valve means controlling the flow of gases into and out of said combustion chamber, a work sensitive probe assembly secured to said valve means whereby the combustion chamber is not closed off until the tool is in position to drive a fastener into a workpiece, means for providing fuel into said combustion chamber and igniting same for driving said piston to drive a fastener, and trigger operated cam means responsive to the movement of said valve means whereby the tool cannot be fired until the combustion chamber is closed and the chamber cannot be opened until the trigger is released, and means for facilitating the return of said piston to its driving position after the tool has been fired.

4,483,475

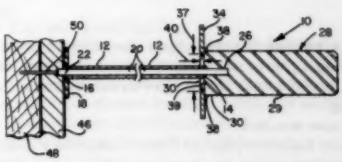
NAIL DRIVER

Nicholas Whitaker, 3284 A-G-A Rd., Hood River, Oreg. 97301

Filed Dec. 2, 1982, Ser. No. 446,248

Int. Cl.³ B25C *1/02*

U.S. Cl. 227—147 **2 Claims**



1. A tool for driving nails and similar fasteners, comprising:

(a) an elongate handle having first and second ends;

(b) a plunger rod, having an inner end and an outer end, said inner end being fixedly attached to said handle and said handle and said outer end ncluding a driving face;

(c) an elongate guide tube including an interior bore in which said plunger rod is slidably disposed, said guide tube having an inner end, an outer end, and a radially extending flange located on said outer end;

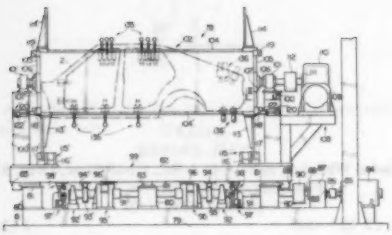
(d) finger guard means located proximate said first end of said handle and extending radially outward about said handle for preventing a user's fingers from slipping inadvertently from said handle toward said plunger rod during use of said tool; and

(e) plunger limit stop means associated with said handle for limiting extension of said plunger rod through said guide tube, selectively either to a first position wherein said driving face is exposed within a first predetermined distance beyond an end of said guide tube or to a second position wherein said driving face is exposed a predetermined countersinking distance beyond an end of said guide tube, said plunger limit stop means including means defining a cavity located at said first end of said handle and surrounding a portion of said inner end of said plunger rod, for receiving said outer end of said guide tube therein to a maximum distance limiting extension of said driving face beyond said outer end of said guide tube to said predetermined countersinking distance, when said plunger rod has been inserted into said guide tube from said outer end thereof, and additionally including means associated with said first end of said handle for preventing said flange from entering said cavity when said plunger rod is inserted into said guide from said inner end thereof.

4,483,476
MULTI-SHIFT VEHICLE-BODY ASSEMBLING APPARATUS

Tsuneo Fujikawa, Ebina, and Haruyoshi Takagishi, Yamato, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Continuation of Ser. No. 316,835, Oct. 30, 1981, abandoned. This application Feb. 28, 1984, Ser. No. 582,879
Claims priority, application Japan, Nov. 11, 1980, 55-158355
Int. Cl.³ B21P *21/00*; B23K *37/02*
U.S. Cl. 228—4.1 **4 Claims**



1. A multi-shaft vehicle-body assembling apparatus for assembling a pair of side body structures to a floor structure to form part of a body structure of an automotive vehicle, comprising:

a frame structure,

means for conveying the floor structure to a predetermined position within the frame structure,

side-body transfer means for conveying a pair of side body structures to predetermined temporary positions within the frame structure,

side-body positioning means operative to receive from said side-body transfer means the side body structures conveyed into said predetermined temporary positions thereof and to thereafter move the side body structures to predetermined final positions ready to be assembled to the floor structure in said predetermined position thereof, the side-body positioning means comprising a pair of base structures which are movable toward and away from each other on both sides of the predetermined position of the floor structure and a pair of carrier structures respectively supported on said base structures and each having parallel opposite outer surfaces, the carrier structure being rotatable between diametrically opposite two upright positions with respect to said base structure about an axis which is fixed with respect to said base structure,

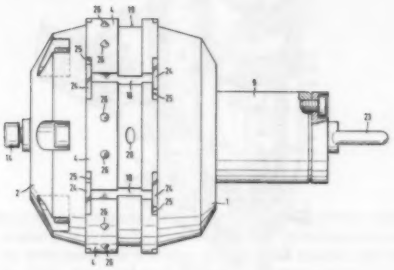
fastening means operative to fasten the side body structures in said predetermined final positions thereof to the floor structure in the predetermined position thereof,

wherein said side-body positioning means further comprises first and second fixtures carried on each of said outer surfaces of said carrier structure and operable for receiving from said side-body transfer means the side body structure conveyed to said predetermined temporary position, each of the first and second fixtures comprising first and second fixture assemblies which are rotatable between diametrically opposite two angular positions with respect to said carrier structure about a common axis substantially parallel with the axis of rotation of the carrier structure so that said first and second fixture assemblies are capable of gripping portions of the side body structures of automotive vehicles of two different models.

4,483,477
CLAMPING DEVICE FOR TUBES TO BE WELDED TOGETHER

Gerd-Jürgen Eckold, St. Andreasberg, and Hans Maass, Bad Lauterberg, both of Fed. Rep. of Germany, assignors to Walter Eckold GmbH & Co., St. Andreasberg, Fed. Rep. of Germany

Filed Jul. 6, 1982, Ser. No. 395,475
Int. Cl.³ B23K *37/04*
U.S. Cl. 228—42 **13 Claims**



1. Clamping apparatus for use in the joining of tubular members by fusion bonding comprising:

means defining a housing, said housing having an axis;

a plurality of jaws, said jaws being positioned in said housing means for limited radial movement relative to said housing means axis, said jaws each having a recess extending across the surface thereof which faces outwardly with respect to said axis, said recesses being aligned and cooperating to define an annular groove having an open side;

means for imparting radial movement to said jaws whereby said jaws may be extended into a clamping relationship with the interior surfaces of a pair of abutting tubular members with said annular groove in registration with the joint between the tubular members;

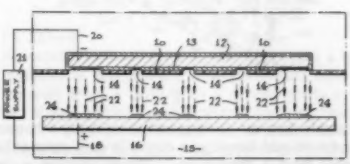
a plurality of resiliently biased anchoring pins, said pins being extendable outwardly with respect to said housing means to contact the wall of a first of the tubular members, said pins supporting the clamping apparatus in the first tubular member prior to engagement of the tubular members by said jaws; and

means for delivering a protective gas to said annular groove.

4,483,478
METHOD FOR FABRICATING SUPERPLASTICALLY FORMED/DIFFUSION BONDED ALUMINUM OR ALUMINUM ALLOY STRUCTURES

David W. Schulz, Hermosa Beach, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 11, 1981, Ser. No. 301,360
Int. Cl.³ B23K *31/02*
U.S. Cl. 228—157 **25 Claims**



1. A process for diffusion bonding and superplastic forming of metal workpieces containing surface oxides, which comprises applying a mask over selected areas of said workpieces,

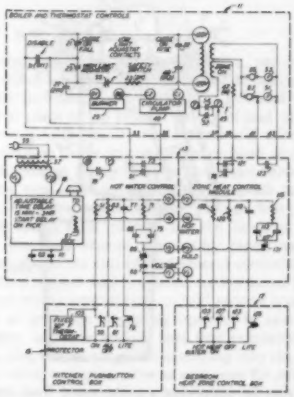
and leaving other preselected areas uncovered, subjecting one or more of said workpieces to sputtering in a zone of reduced pressure in an inert gas atmosphere employing said workpieces as cathodes, and applying a differential potential between an anode and one or more of said cathodes sufficient to create a cold cathode glow discharge and causing the oxides of said uncovered preselected areas to be sputtered away and transferred electrostatically to the surfaces of said anode, and to form cleaned surfaces in said preselected areas, without affecting the oxides over said selected areas covered by said mask, placing said workpieces in contact with each other in a stack without reoxidizing said cleaned surfaces, and diffusion bonding said workpieces under heat and pressure at said preselected areas from which oxides were removed, without bonding said selected areas from which oxides were not removed, and superplastically forming at least one of said workpieces by applying fluid pressure within the unbonded areas of said stack while said stack is within a temperature range at which said at least one workpiece exhibits superplastic characteristics.

4,483,479

RATIONED HEAT CONTROL SYSTEM

Louis W. Snell, 19 Monroe Dr., Poughkeepsie, N.Y. 12601

Filed Apr. 18, 1983, Ser. No. 485,714
Int. Cl.³ F24D *3/00*
U.S. Cl. 237—8 R **10 Claims**



1. A rationed hot water control system for use with a heated fluid boiler having a burner and at least one heating zone with a zone valve, said system comprising:

a low-limit aquastat for maintaining a minimum temperature for the fluid in the boiler, said low-limit aquastat being electrically connected to the burner and being adapted to maintain the fluid temperature in said boiler at a minimum temperature;

a high-limit aquastat for maintaining a maximum temperature for the fluid in the boiler, said high-limit aquastat being electrically connected to the burner and being adapted to maintain the fluid temperature in said boiler at a maximum temperature;

a control circuit including a timer and a circuit-closing switch connected to the high-limit aquastat to activate the high-limit aquastat to increase the fluid temperature to the maximum temperature setting of the high-limit aquastat when the circuit-closing switch is activated, the high-limit aquastat being deactivated by the timer concluding its time period, said low-limit aquastat and said high-limit aquastat being connected so that the fluid temperature is controlled by the low-limit aquastat when the circuit-closing switch is inoperative;

said circuit-closing switch being manually operated and being remotely located from said boiler in said heating zone, said control circuit further including a thermostatically-actuated switch in parallel with the circuit-closing switch to activate the high-limit aquastat whenever the heating zone temperature drops to a preset level; and

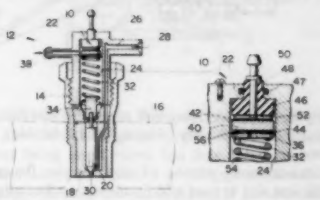
a thermostat and a valve relay, said thermostat being located in said heating zone.

4,483,480

INJECTION VALVE TIMING SENSOR

Seishi Yasuhara, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Feb. 5, 1981, Ser. No. 231,599
Claims priority, application Japan, Feb. 13, 1980, 55-15483
Int. Cl.³ B05B *1/30*
U.S. Cl. 239—73 **6 Claims**



1. In a fuel injector of the type having:

a housing;

a nozzle disposed in said housing;

a valve element operatively disposed in said nozzle for controlling an injection orifice thereof;

a spring engaging said valve element at one end thereof for biasing said valve element toward a position in which said valve element closes said injection orifice;

a piezoelectric element disposed in said housing;

a lift sensor comprising:

a terminal element disposed in contact with a first side of said piezoelectric element, said terminal element being insulated from said housing and projecting out of said housing through an opening formed therein; and

means interposed between said spring and a second side of said piezoelectric element for establishing electric contact between said second side of said piezoelectric element and said housing and for retaining said piezoelectric element within said housing, said means being defined by a ground plate having the form of a metallic disc having a plurality of projections extending from the periphery thereof, said projections engaging a wall of said housing to establish said electrical contact and to hold said piezoelectric element within said housing, said ground plate having a surface area nearly equal to or greater than that of said second side.

4,483,481

SPRAY TIP

Oliver J. Calder, Orange, Calif., assignor to Phyllis Graham, Orange, Calif.

Continuation of Ser. No. 165,247, Jul. 2, 1980, abandoned. This application Nov. 18, 1982, Ser. No. 442,525
Int. Cl.³ B05B *15/02*
U.S. Cl. 239—119 **7 Claims**

1. A spray tip comprising:

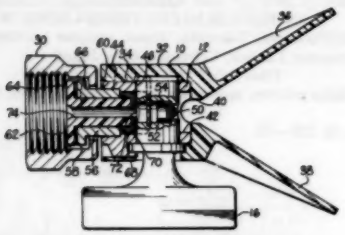
a housing having a longitudinal through passageway and an intersecting othogonal cylindrical bore;

a spray guard having a pair of outwardly diverging wings dependent from a spray guard body having a central cavity receiving said housing thereby forming a housing and spray guard subassembly and an aperture in said spray guard body aligned with said intersecting cylindrical bore with at least one lip member dependent on said housing and spray guard subassembly;

a cylindrical turret member having an integral handle and rotatably seated in said intersecting cylindrical bore and extending through said aligned aperture of said spray guard body and having a transverse bore in alignment with said through passageway;

a spray tip orifice member mounted in said transverse bore;

a discontinuous annular flange on said turret member;



said lip member overlying and capturing said flange thereby securing the assembly of spray guard, housing and turret member; and

the discontinuous portion of said annular flange being of sufficient size to pass said lip member when aligned therewith and permit removal of said turret member.

4,483,482

DUAL-MATERIAL ATOMIZING NOZZLE

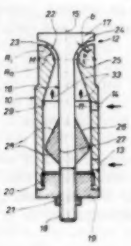
Martin Junger, Grafenberg, and Wolfgang Nieuwkamp, Kappishausern, both of Fed. Rep. of Germany, assignors to Lechler GmbH & Co., KG, Fellbach, Fed. Rep. of Germany

Filed Feb. 2, 1982, Ser. No. 344,941

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1981, 3106962

Int. Cl.³ B05B *17/06*

U.S. Cl. 239—434 **13 Claims**



1. A supersonic nozzle for atomizing liquid and gas components, comprising:

(a) a housing have an axially extending bore with an open end and a closed end;

(b) said open end having a continuous non-interrupted inner surface including a generally radially outwardly flaring portion;

(c) said bore including a generally cylindrical portion and a frusto-conical portion connecting said cylindrical portion with said open end and said frusto-conical portion defining a mixing chamber and said frusto-conical portion having an apex adjcent said open end and from which said outwardly flaring portion extends;

(d) a gas inlet generally adjacent said closed end;

(e) a liquid inlet spaced adjacent the area connecting said frusto-conical portion and said cylindrical portion;

(f) an insert coaxial with said bore extending from said closed end to said open end and including a continuous non-interrupted outer surface generally corresponding to and aligned with said open end inner surface and providing a generally radially flaring terminal portion cooperating with said open end radially flaring portion and spaced therefrom and defining a substantially radially directed annular gap discharge for said bore;

(g) said insert cooperating with said frusto-conical portion for providing a flow channel adapted for accelerating a gas-liquid mixture to superson speeds; and,

(h) a convergent-divergent restrictor member disposed about said insert and positioned in said bore between said gas inlet and said liquid inlet and defining a Laval principle flow channel for accelerating a gas to supersonic speeds whereby said accelerated gas mixes with a liquid in said frusto-conical mixing chamber and the mixture thereof is accelerated to supersonic speeds and discharges substantially radially through said annular gap at supersonic speeds.

4,483,483

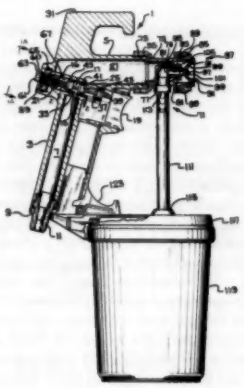
GUN FOR SUPPLYING COMPRESSED FLUID

Thomas E. Grime, Temperance, Mich., assignor to Champion Spark Plug Company, Toledo, Ohio

Filed Nov. 12, 1980, Ser. No. 205,915

Int. Cl.³ B05B *7/12*

U.S. Cl. 239—526 **4 Claims**



1. A gun for supplying a compressed fluid comprising:

a housing defining a passageway, said passageway defining at least one opening, positioned for supplying a compressible fluid;

a valve means moveably positioned with respect to said passageway for controlling the supply of said compressible fluid, said valve means defining an aperture, said valve means being moveable with respect to said passageway to vary the position of said aperture with respect to said passageway to control the supply of said compressible fluid;

a rotatable connection means is positioned in one end of said passageway to connect said passageway to a source of compressed fluid, said rotatable connection means including an inner core having a large diameter section that sealingly engages said passageway and a removable clip positioned around said inner core, said removable clip containing at least one pivotable flange having a projection that engages said opening in said passageway to maintain said inner core and said removable clip in said passageway

a discharge end located on one end of said passageway, said discharge end adapted to receive discharge nozzles for said spray gun whereby said compressible fluid acts as the driving fluid for different driven fluids and particulate solids.

4,483,484

ELECTROMAGNETICALLY ACTUATABLE VALVE

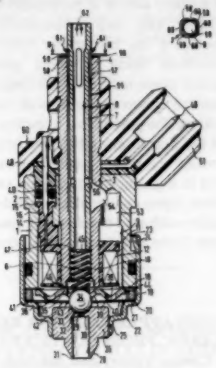
Udo Hafner, Lorch, and Waldemar Hans, Bamberg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 13, 1982, Ser. No. 417,736

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1982, 3207917

Int. Cl.³ B05B *1/30*; F16K *31/06*; F02M *51/08*

U.S. Cl. 239—585 **1 Claim**



1. In an electromagnetically actuatable valve, particularly a fuel injection valve for fuel injection systems in internal combustion engines, including a valve casing, a solenoid winding and core held in place in the interior cavity of said valve casing, liquid flowing in the cavity and around said winding, an armature for cooperatively moving a valve head against the force of a compression spring relative to a fixed valve seat, a first connecting pipe disposed concentrically with the valve axis, and a second pipe disposed interiorly of said first connecting pipe, such that a flow channel for the liquid is formed between said first and second connecting pipes, said flow channel ending above the end of said second connecting pipe which is directed toward said armature, said channel being in communication with a central bore of said second connecting pipe through at least one degassing opening in said second connecting pipe, and one end of said first connecting pipe being fixed to said valve casing and extending into the interior cavity of said valve casing to serve as said core for said winding.

4,483,485

ELECTROMAGNETIC FUEL INJECTOR

Kingo Kamiya, Toyoake, and Takaaki Takagi, Obu, both of Japan, assignors to Aisan Kogyo kabuskiki Kaisha, Obu, Japan

Filed Nov. 22, 1982, Ser. No. 443,571

Claims priority, application Japan, Dec. 11, 1981, 56-185081[U]; Dec. 14, 1981, 56-203066

Int. Cl.³ B05B *1/30*

U.S. Cl. 239—585 **7 Claims**

1. In an electromagnetic fuel injector including:

a valve housing provided with a fuel injection nozzle and a valve seat at its front end and defining a guide hole extending along the axis of said valve housing,

a valve body slidably inserted into said guide hole,

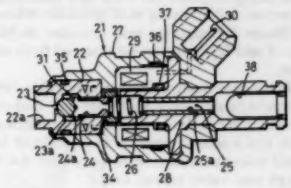
a compression spring adapted to normally urge said valve body so as to close said fuel injection nozzle,

an armature fixed to the rear end of said valve body,

a fixed magnet core disposed opposite to the rear end of said armature and having a fuel passage extending through the central portion of said core, an exciting coil surrounding said fixed magnet core, and

an electromagnetic housing combining said valve housing with said fixed magnet core, said electromagnetic fuel injector being adapted to discharge pressurized fuel when said exciting coil receives a control signal to open said valve body,

the improvement wherein said valve body comprises a spherical valve member and a hollow cylindrical slide member integral with said valve member which is adapted to slide along said guide hole and the interior of which hollow slide member is a fuel passage, said slide member



defining openings at its front and rear ends for passing liquid fuel therethrough, the outer diameter of said slide member being at all points less than the diameter of said hole and the outer diameter of said spherical valve member being less than the outer diameter of said slide member, and

said armature being substantially of a hollow cylindrical cross-section of inner diameter greater than the diameter of said compression spring, whereby said compression spring applies force directly to said valve body.

4,483,486

METHOD AND APPARATUS FOR TREATING LAWNS WITH BOTH GRANULAR AND LIQUID TREATMENT MATERIALS

Robert J. Magda, Morganville, N.J., assignor to Lawn Doctor, Inc., Matawan, N.J.

Filed Sep. 11, 1981, Ser. No. 301,363

Int. Cl.³ B05B *1/28*

U.S. Cl. 239—663 **11 Claims**

1. A compact, hand-controlled apparatus for applying treatment materials to the terrain for enhancing and maintaining growth thereon, said apparatus including:

a chassis, wheels mounted to said chassis, and a handle mounted to said chassis for propelling said chassis, said chassis including storage means for accommodating granular treatment material,

means for applying said granular material to said terrain to be treated,

means defined in said chassis for accommodating a liquid treatment material,

hose means having an inlet and outlet received within said means for accommodating said liquid treatment material,

valve means coupled to said hose means between said inlet and outlet,

discharge means coupled to said valve means for discharging said liquid treatment material from said hose means,

said discharge means being mounted to said chassis proximate the outer sidewall of at least one of said wheels, said wheel being disposed between said discharge means and said means for applying said granular material to shield said means for applying said granular material from the spray of said liquid treatment material from said discharge means,

said valve means being selectively movable between a first position in which only said inlet and said outlet of said hose means are in fluid communication through said valve means, and a second position in which said hose means is in fluid communication with only said discharge means through said valve means, and

means for transporting said liquid treatment material from said means in said chassis for accommodating said liquid treatment material and into said inlet of said hose means whenever said chassis is propelled on said wheels, said transported liquid treatment material being returned to said means for accommodating said liquid treatment material through said outlet of said hose means whenever said chassis is propelled on said wheels and said valve means is in said first position, said transported liquid treatment material being discharged through said discharge means whenever said chassis is propelled on said wheels and said valve means is in said second position, said liquid treatment material being continuously circulated through said hose means when said valve means is in said first position and said chassis is being propelled on said wheels,

said continuous circulation of said liquid treatment material providing substantially uninterrupted liquid flow and pressure of said liquid treatment material transported into said hose means when said valve means is switched between said first and second positions.

4,483,487

VERTICAL ROLLER MILL

Susumu Katsuta; Susumu Adachi, and Hoshino Shuji, all of Tokyo, Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha and Sumitomo Cement Kabushiki Kaisha, both of Tokyo, Japan

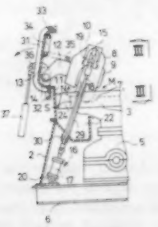
PCT No. PCT/JP81/00181, § 371 Date Mar. 30, 1982, § 102(e) Date Mar. 30, 1982, PCT Pub. No. WO82/00601, PCT Pub. Date Mar. 4, 1982

PCT Filed Aug. 20, 1981, Ser. No. 367,243

Claims priority, application Japan, Aug. 21, 1980, 55-114927

Int. Cl.³ B02C *15/00*

U.S. Cl. 241—121 **1 Claim**



1. A vertical roller mill having a casing, a rotary table rotatably disposed within said casing, a plurality of grinding rollers having axes of rotation above said rotary table and arranged in suitable intervals with each other in the direction of rotation of said rotary table and contacting said rotary table at contact points, a plurality of brackets respectively supporting said grinding rollers, a plurality of openable doors pivotally connected to said casing respectively adjacent said grinding rollers, a plurality of connecting members each having one end pivotally connected to the respective door and the other end being connectable to the respective adjacent bracket, each bracket having one end connected to the respective adjacent door, the other end of each bracket having two spaced projections located in a plane which is perpendicular to the respective grinding roller axis and substantially including said contact point between the respective roller and the rotary table, said projections being arranged symmetrically with respect to a vertical plane including the respective roller axis, and force-application means engaged with said projections to forceably pull down the respective grinding roller and press the same against the said rotary table; said bracket and thereby said respective roller being swingable from said plane through said contact point to a location outside said casing, by opening the respective door, upon engagement of said other end of said connecting member with said bracket and upon disengagement of said projections from said force-application means.

4,483,488

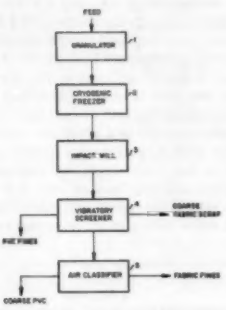
METHOD AND APPARATUS FOR RECOVERING THERMOPLASTIC FROM COATED FABRIC SCRAP

Bruce A. Luff, Center Valley, and Michael C. Kazarnowicz, Wescoesville, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation of Ser. No. 278,936, Jun. 30, 1981, abandoned. This application Apr. 21, 1983, Ser. No. 485,493

Int. Cl.³ B02C *13/02, 23/08*

U.S. Cl. 241—23 **5 Claims**



1. A process for recovering thermoplastic from coated fabric which comprises:

(a) cutting the thermoplastic coated fabric containing about 50 to 75% by weight fabric into smaller pieces;

(b) cryogenically chilling said pieces of thermoplastic coated fabric until the thermoplastic becomes embrittled;

(c) passing the chilled fabric into an inlet of a rotary impact mill and rotatably passing the fabric through said impact mill;

(d) impacting the chilled coated fabric in said mill to liberate the thermoplastic from the fabric and discharging the liberated thermoplastic and fabric so that a minimum of 70% of the chilled fabric entering said mill is discharged before rotating past said inlet and thus preventing a build-up of fabric fluff in said mill;

(e) feeding the liberated thermoplastic and fabric to a vibrational screening means having at least three decks;

(f) separating the feed to said screening means into coarse fabric of greater than 16 mesh, thermoplastic fines of less

than 60 mesh and a third segment of greater than 60 mesh and less than 16 mesh;

(g) passing said third segment from said screening means into a gas classifying means containing a plurality of solid balls for aiding distribution of gas and in separating said third segment into fabric fines and a coarse thermoplastic product;

(h) separating said third segment into said coarse thermoplastic product and said fabric fines in said classifier means by passing a carrier gas countercurrent to said third segment to sweep away said fabric fines; and

(i) recovering the coarse thermoplastic product from the lower portion of said classifier.

4,483,489

DEVICE FOR THE AUTOMATIC ANCHORING OF THE OUTER YARN END OF BALLS IN AUTOMATIC BALLING MACHINES

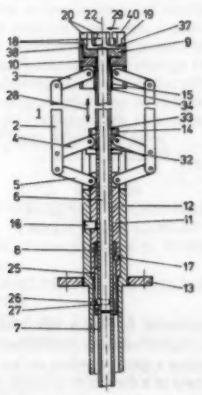
Rudolf Knecht, Kollbrunn, Switzerland, assignor to G & W Maschinen AG, Wetzikon, Switzerland

Filed May 27, 1982, Ser. No. 382,585

Claims priority, application Switzerland, Jun. 5, 1981, 3699/81

Int. Cl.³ B65H *54/64, 75/24*

U.S. Cl. 242—2 **5 Claims**



1. Apparatus for anchoring the terminal thread end of a ball wound on an automatic winding machine having a winding mandrel mounted at its rear end for rotation about its central axis, and stretcher means at its frontal end on which said thread is wound, said apparatus comprising a plurality of open channels formed on the frontal surface of the forward end of the mandrel for receiving the thread, said channels extending radially perpendicular to the central axis, and retaining means rotatable with respect to the frontal end of said mandrel between a first position in which at least a part of at least one of said channels is open frontally and a second position in which said at least one of said channels is frontally occluded whereby a thread may be received and retained in said at least one of said channels.

4,483,490

INDIVIDUAL COIL WINDER WITH AUTOMATIC COIL CHANGE

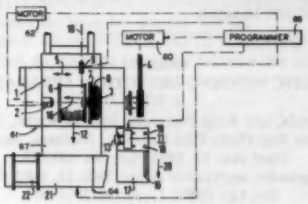
Günther Engmann; Werner Hagen, both of Schwabach, and Hermann Heider, Kammerstein, all of Fed. Rep. of Germany, assignors to Maschinenfabrik Niehoff KG, Schwabach, Fed. Rep. of Germany

Filed Apr. 12, 1983, Ser. No. 484,426

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1982, 3215573

Int. Cl.³ B65H *54/02, 75/28*

U.S. Cl. 242—25 R **19 Claims**



1. In an individual coil winding apparatus for winding a string-like material on a coil form having two lateral flanges, said coil winding apparatus including clamping means for holding said coil form at a winding station during a winding operation, said clamping means in part forming a closable clamping gap substantially juxtaposed to said coil form at said winding station for receiving an end segment of said string-like material prior to said winding operation and holding said end segment during said winding operation, said coil winding apparatus further including string-dividing means including a manipulator for severing said string-like material and inserting an end segment thereof formed by such severing into said clamping gap between successive winding operations, the improvement wherein said manipulator comprises:

a support post spaced from the winding station;

an arm pivotably and slidably fastened to said support post; and

holding and cutting means on said arm for grasping and severing the string-like material at a point along a segment of said string-like material extending from said winding station to a fully wound coil form upon removal thereof from said winding station at the termination of a winding operation.

4,483,491

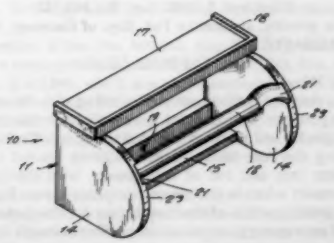
TOWEL OR TISSUE HOLDER

James R. Rainey, 3825 N.W. 29, Oklahoma City, Okla. 73107

Filed Apr. 25, 1983, Ser. No. 487,973

Int. Cl.³ B65H *19/00, 49/00*

U.S. Cl. 242—55.2 **1 Claim**



1. A towel or tissue holder, comprising, in combination, a

frame and a spindle removably receivable upon said frame; said frame comprising a pair of spaced-apart, parallel side panels each having a rounded front edge, a transverse panel mounted across the top of both said side panels forming a top shelf, a pair or rear braces between said side panels having mounting holes for securing said holder to a room wall, a shallow groove on facing sides of said pair of side panels for supporting said spindle therebetween, opposite ends of said spindle being slidably received and supported in said grooves, a replacable roll of paper being received on said spindle, each said groove opening out on a rounded front edge of said side panel and extending arcuately rearwardly and downwardly, and including a rearwardly projecting corner formed therealong, and having a horizontal bottom panel comprising a secret shelf behind said roll of paper.

4,483,492

AUTOMATIC WINDING DETECTION APPARATUS FOR A WEB

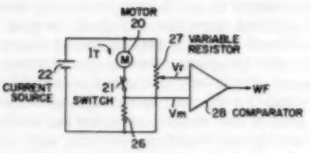
Kanji Tokuda, and Kenji Nakauchi, both of Kaisei, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara, Japan

Filed Jan. 17, 1983, Ser. No. 459,038

Claims priority, application Japan, Feb. 15, 1982, 57-22292

Int. Cl.³ B65H *25/32*; H02P *3/08*

U.S. Cl. 242—57 **2 Claims**



1. An automatic web winding detection apparatus comprising:

a motor which is connected to a power source and which drives and revolves a reel core of an automatic winding device for winding a web fed from a feeding means on said reel core;

a voltage detection means comprising a resistor connected in series with said motor for detecting a voltage which corresponds to a driving current of said motor; and

a comparator which compares said voltage detected by said voltage detection means with a reference voltage obtained by voltage dividing a voltage from said power source for said motor so as to thereby sense the end of the winding operation of the web on the reel core on the basis of said voltage comparison.

4,483,493

CORE HOLDER FOR A WINDER

Herbert Schönmeier, Düsseldorf, Fed. Rep. of Germany, assignor to Jagenberg AG, Düsseldorf, Fed. Rep. of Germany

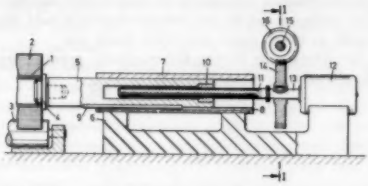
Filed Apr. 5, 1982, Ser. No. 365,762

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1981, 8133346[U]

Int. Cl.³ B65H *17/02*

U.S. Cl. 242—66 **1 Claim**

1. In a machine for the centerless winding of webs on a core, including support cylinders for a web, a core holder, a motor driven spindle and means connected to the spindle for axially displacing the core holder within a given limited range of movement into and out of engagement with the core, the improvement wherein the means comprises means for adjusting the initial position of the core holder for the given limited range of movement to accommodate different length cores, the adjusting means comprising a threaded member threadably engaged with the spindle and connected to the core holder, a control shaft, means coupling the control shaft to the spindle including a step-down gearing having such a ratio that no more than one full rotation of the control shaft corresponds to the given limited range of movement and a slip-coupling for connecting a portion of the gearing to the control shaft, a limit switch including trippers connected to the control shaft for controlling the motor-driven spindle, a cam connected to the control shaft and a stationary abutment disposed in the path of



the cam to effect a slipping of the gearing with respect to the control shaft when spindle rotation corresponds to more than one full rotation of the control shaft; whereby the continued rotation of the spindle while the gearing slips moves the spindle axially to a new initial position wherein the relationship between the limit switch, cam and stationary abutment is maintained to obtain the given limited range of movement without further adjustments.

4,483,494

SEAT BELT RETRACTOR

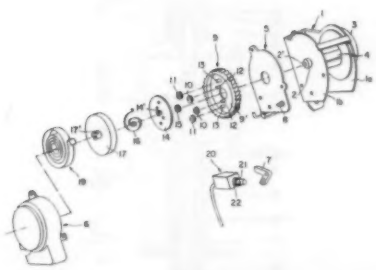
Juichiro Takada, 12-1, 3 chome, Shinmachi, Setagaya-ku, Tokyo, Japan

Filed Jun. 9, 1983, Ser. No. 502,765

Claims priority, application Japan, Jun. 9, 1982, 57-084778[U]

Int. Cl.³ A62B *35/00*; B65H *75/48*

U.S. Cl. 242—107 **1 Claim**



1. A seat belt retractor having a belt reel shaft rotatably carried by a frame and a winding mechanism coupled to the reel shaft and including a spiral winding spring adapted to urge the reel shaft to rotate in a direction to wind the belt onto the reel, characterized in that the winding mechanism comprises a planetary gear train including a sun gear on the reel shaft, a planet gear carrier rotatably carried on the shaft, a first planet gear rotatably supported on the carrier and meshing with the sun gear, a second planet gear rotatably supported on the carrier and meshing with the first planet gear, and an internal gear rotatably supported in mesh with the second planet gear and coupled to the winding spring such that it is biased to drive the sun gear through the planet gears in the belt-winding direction; an auxiliary spring coupled between the internal gear and the planet carrier such that the planet carrier is biased to rotate relative to the internal gear in the belt-winding direction; a circular row of ratchet teeth on the planet carrier located concentrically to the reel shaft and facing against the belt-winding direction; and means selectively engageable with a ratchet tooth on the carrier to stop rotation of the carrier in the

belt-winding direction, whereby the planetary gear train transmits a torque to the reel shaft that is substantially less than the torque transmitted by the winding spring to the internal gear when a ratchet tooth is so engaged.

4,483,495

MECHANISM FOR BLOCKING A ROLL-UP DEVICE FOR SAFETY BELTS

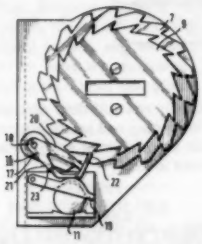
Wolf-Dieter Hönl, Schwäbisch Gmünd, Fed. Rep. of Germany, assignor to Repa Feinstanzwerk GmbH, Alfdorf, Fed. Rep. of Germany

Filed Nov. 24, 1982, Ser. No. 444,090

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1981, 3147376; Feb. 16, 1982, 3205515

Int. Cl.³ A62B *35/02*; B65H *75/48*

U.S. Cl. 242—107.4 A **3 Claims**



1. An apparatus for retarding rotation of a safety belt reel, said apparatus comprising a circular array of locking teeth connected with the reel for rotation therewith, a locking pawl engageable with array of locking teeth to block rotation of the reel, a sensor assembly responsive to a predetermined change in vehicle velocity, a circular array of control teeth connected with the reel for rotation therewith, a control pawl movable into engagement with said array of control teeth by said sensor assembly upon the predetermined change in vehicle velocity, said control pawl being resiliently deflectable by said array of control teeth to move said locking pawl from a position spaced from said array of locking teeth into engagement with said array of locking teeth.

4,483,496

METHOD OF WINDING FILAMENTARY GOODS, IN PARTICULAR CABLES

Leopold Weinlich, Industriestrasse 6, D-6831 Reilingen, Fed. Rep. of Germany

PCT No. PCT/DE82/00008, § 371 Date Sep. 3, 1982, § 102(e) Date Sep. 3, 1982

PCT Filed Jan. 13, 1982, Ser. No. 417,111

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1981, 3101126

Int. Cl.³ B65H *54/28, 75/18*

U.S. Cl. 242—158 R **15 Claims**

1. Method of winding cable goods or the like (6) on a drum (1) having a cylindrical core (2) and end flanges (3, 4) at least generally located at right angles to the axis (5) of the core, in which the goods are wound on the core between the flanges comprising, in accordance with the invention, the steps of

(a) guiding and winding the goods in an essentially circular, non-spiral ring-shaped path about the core (2) over a major portion of the circumference of the core, in which the center line (11) of the goods follows an endless ring-shaped curve and spacing the center line of the first winding loop from the inner wall of the first adjacent flange of the drum by about the thickness of the goods, whereby a lateral end surface of the goods will be spaced from said inner wall by about half the diameter of the goods;

(b) guiding, and winding the goods, within the remainder of the circumference, and forming a minor portion thereof and a transition zone (13), in an axially shifting spiral path to provide an axial shift zone of the goods on the core, to an adjacent, essentially circular path;

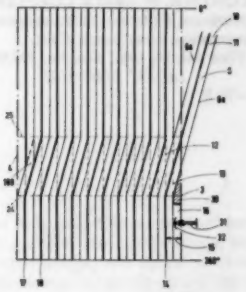
(c) then continuing to guide, and wind, alternately, sequentially circular path portions defining closely adjacent non-spiral portions and spiral transition portions (13) until the essentially circular portion comes to lie adjacent the inner wall of the other one of the end flanges:

(d) winding and guiding the goods in said transition zone up and over the underlying layer to thereby form an upper layer (20);

(e) winding and guiding the goods in the upper layer so that the goods fit into the grooves formed between the center lines (11) thereof of the underlying first layer (9); and

(f) repeating the steps (a), (b), (c), (d), (e),

and wherein the steps (a), (b) and (c) comprise guiding said windings to maintain distances between the center lines



(11) of adjacent winding loops such that adjacent loops of windings on the spool are loosely spaced from each other, and the last winding loop (17) is at a minimum loose spacing from the inner face of the adjacent other end flange;

the step (b) of guiding the goods within said transition zone (13) further comprises relatively moving the rotating drum (1) and the goods (6) with respect to each other in a rapid, reciprocating short-stroke movement in axial direction in relation to the drum;

(g) continuously determining, during the winding process, the necessary distance between the individual windings of the first layer (9), said calculation being based on:

the diameter of the goods (6) to be wound,

the distance between the inner faces of the end flanges,

the rotational angle position of the drum at a given instant of time; and

(h) controlling the guidance of the goods in the steps (a), (b), and (c) in accordance with the so-obtained determination.

4,483,497

WIDE-BODY SUPERSONIC AIRCRAFT

Scott C. Rethorst, 1806 Foothill St., South Pasadena, Calif. 91030

Continuation of Ser. No. 068,464, Aug. 21, 1979, abandoned, which is a continuation-in-part of Ser. No. 747,505, Dec. 6, 1976, Pat. No. 4,168,044, which is a continuation-in-part of Ser. No. 584,635, Jun. 6, 1975, Pat. No. 4,008,866, which is a continuation-in-part of Ser. No. 342,151, Mar. 16, 1973, Pat. No. 3,904,151. This application Nov. 24, 1981, Ser. No. 324,653

Int. Cl.³ B64C *30/00*; B64D *27/18*

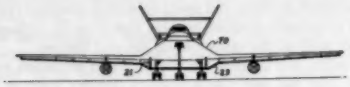
U.S. Cl. 244—15 **20 Claims**

18. An improved aircraft comprising;

a fuselage having a plurality of cylindrical sections joined on their sides to provide a fuselage width in excess of its height, and

nozzle means having an outlet that is transversely elongate relative to the aircraft and operable to discharge a super-

sonic stream of fluid, the outlet extending at least the width of the fuselage and being spaced below the fuselage to form an elongate gap between the fuselage and the nozzle through which a layer of air streams and is compressed by the fuselage, and the nozzle means being operable to generate in a vortex flap along the interface between the compressed layer of air and the nozzle stream for providing a pressure shield below the fuselage.



4,483,498

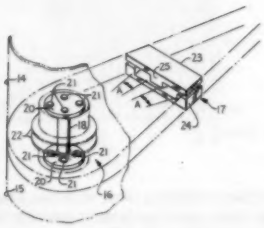
FLIGHT CONTROL SURFACE COUPLING SYSTEM

Wilfred E. Boehringer, Fullerton, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Jul. 14, 1982, Ser. No. 398,089

Int. Cl.³ B64C 9/02

U.S. Cl. 244—75 R **4 Claims**



1. A compliant coupling system for connecting segments of an aircraft control surface comprising:

at least two airfoil segments arranged side by side and hinged for rotation about a generally common hinge line;

at least two actuators driving each of said airfoil segments and at least one of said actuators is redundant;

a spring biasing means connecting said at least two airfoil segments so that said at least two airfoil segments may rotate relative to each other by stressing said spring; and

means to limit said relative rotation between said at least two airfoil segments and provide a coupling between said at least two airfoil segments so that one airfoil segment may drive the other airfoil segment.

4,483,499

SYSTEM AND METHOD FOR LOADING CARGO INTO LIGHT AIRCRAFT

David Fronk, 481 S. 925 West, Orem, Utah 84057

Filed Jun. 9, 1983, Ser. No. 502,456

Int. Cl.³ B64D 9/00

U.S. Cl. 244—118.1 **27 Claims**

1. A system for converting the interior of a light aircraft so that cargo can be easily loaded or unloaded through a door of said aircraft, said system comprising:

first means for forming a rack-like structure onto which said cargo can be loaded, said first means comprising means for removably securing said rack-like structure to the interior of said aircraft; and

second means, adjacent said first means, for forming a ramp from said door of said aircraft to said rack-like structure such that cargo can be moved over said ramp and onto said rack-like structure, said ramp comprising means for removably securing said ramp to said aircraft adjacent to said first means such that said ramp is movable with respect to said rack-like structure through the interior of said aircraft and essentially parallel to said first means, and said second means comprising means for releasably securing said ramp within said aircraft such that said ramp can be positioned between said door and said rack-like structure for use in loading and unloading cargo and such that said ramp can be positioned away from said door when said ramp is not in use.

4,483,500

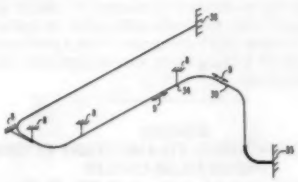
PIPING SUPPORT SYSTEM FOR LIQUID-METAL FAST-BREEDER REACTOR

William G. Brussalis, Jr., Forward Township, Washington County, Pa., assignor to The United States of American as represented by the United States Department of Energy, Washington, D.C.

Continuation-in-part of Ser. No. 267,824, May 27, 1981, abandoned. This application May 14, 1982, Ser. No. 378,447

Int. Cl.³ F16L 3/00

U.S. Cl. 248—58 **6 Claims**



1. A piping means and support means system for connecting pump means to heat exchanger means in a liquid metal fast breeder reactor, said system comprising:

said piping means of said system having a U-shaped piping section confined to one plane, said U-shaped piping section formed of two straight leg piping sections, a bight piping section joining two ends of said two straight leg piping sections to form said U-shaped piping section, the other end of one of said straight leg piping sections connecting to said pump means through a ninety-degree-bend piping section of said piping means which is located in said one plane, and the other end of the other of said straight leg piping sections connecting to said heat exchanger means;

said support means of said system including a plurality of rigid links which support said piping means from fixed surface means, said rigid links each comprising a rigid link section joined to said piping means by a pivotal connection and also joined to said fixed surface means by a pivotal connection;

one of said rigid links affixed to said piping means proximate the center of said bight piping section and positioned

generally perpendicular to said one plane with the pivotal connections to said one rigid link permitting said U-shaped piping section to elongate somewhat in length during reactor operation while maintaining vertical support for said piping means;

another of said rigid links affixed to said piping means proximate the center of said bight piping section and positioned generally in said one plane with the pivotal connections to said second rigid link permitting said U-shaped piping section to elongate somewhat in length during reactor operation while maintaining lateral positioning for said piping means;

remaining of said rigid links affixed in spaced relationship to said U-shaped piping section with the pivotal connections to said remaining rigid links permitting said U-shaped piping section to elongate while maintaining vertical support for same; and

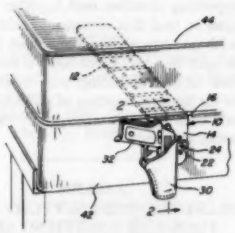
additional retaining means connecting said fixed surface means to said piping means on either side of said ninety-degree-bend piping section, and said additional retaining means operable to limit the movement of said ninety-degree-bend piping section of said piping means.

4,483,501

HOLSTER HOLDER

Tillman L. Eddy, West Palm Beach, Fla., assignor to Christopher D. Wright, North Palm Beach; Bernard F. O'Hara, Palm Beach Gardens and Michael L. O'Hara, West Palm Beach, all of, Fla.

Filed May 10, 1983, Ser. No. 494,432
Int. Cl.³ F16M *11/00*
U.S. Cl. 248—205.1 **6 Claims**



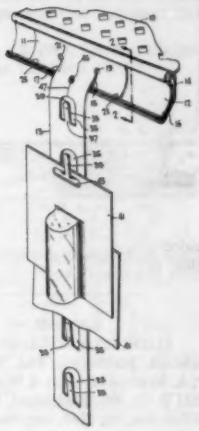
1. A holster and holster holder combination for supporting a gun within the holster from various support structures and with the supported gun in a position for ready access and use, said holder including a first elongated stiff panel, a second stiff panel hingedly supported from one end portion of said first panel for angular displacement relative thereto about an axis generally paralleling said panels and extending transverse of said first panel, an elongated bar, attaching means removably attaching the opposite end portions of said elongated bar to said second panel with said bar generally paralleling and overlying one side of said second panel and having at least its longitudinal midportion slightly spaced from said one side face for reception of a portion of a holster support loop between said bar and second panel, said second panel including a circular pattern of a plurality of bores formed therethrough with each bore in said pattern being diametrically opposite another bore of said pattern, said attaching means including elongated fastener means removably secured through opposite ends of said bar and diametrically opposite bores of said pattern, said holster including a belt loop through which the midportion of said elongated bar extends.

4,483,502

SUPPORT UNIT FOR DISPLAY ITEMS

Jacob Fast, 7561 NW. 9th St., Plantation, Fla. 33317

Filed Sep. 23, 1982, Ser. No. 422,009
Int. Cl.³ F16B *5/06*
U.S. Cl. 248—222.1 **16 Claims**



1. An article of manufacture for supporting apertured items for display from a display structure having a forward edge with a straight support ledge, said article comprising an integrally-formed unit having a mounting portion and an item-supporting portion, wherein said mounting portion is a flexible tag-like member including a support edge divided into two spaced straight edge segments which are adapted to be linearly aligned to contact said support ledge when said article is in use, said segments defining a space therebetween, and wherein said item-supporting portion comprises a flap-like member projecting through said space and outwardly beyond said edge segments from a location on said mounting portion inward of said edge segments, said item-supporting portion being flexible out of plane with respect to said edge segments, so as to be disposed forwardly of said support ledge when said edge segments are in linear contact with said support ledge, said item-supporting portion further including at least one finger-like member with a proximal end secured to said flap-like member and a remote end which is flexibly bendable forwardly of said flap-like member to engage an apertured item for display.

4,483,503

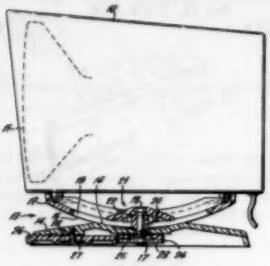
SWIVEL MOUNTINGS

Geoffrey D. Gahan, Great Missenden, England, assignor to Mouldmaking Design Centre Limited, Buckinghamshire, England

Filed Mar. 31, 1982, Ser. No. 364,095
Claims priority, application United Kingdom, Apr. 3, 1981, 8110579; Aug. 25, 1981, 8125952
Int. Cl.³ A47B *91/00*
U.S. Cl. 248—349 **11 Claims**

1. A swivel mounting for an instrument or apparatus comprising two interconnected parts, one part, in use, being associated with an instrument or apparatus, and the other part being intended to remain stationary relative to a fixed surface, if necessary by fixing, the two parts having mating spherical surfaces which are capable of relative sliding movement to enable the instrument or apparatus and said one part to be rotated selectively about a vertical axis and a horizantal axis, relative to said other part, means interconnecting the two parts, separate clamping means for applying or increasing frictional pressure between the parts to lock the spherical

surfaces against relative sliding movement, said clamping means having a wedge action, said wedge action being effected



by a lever guided for longitudinal movement and actuated by the rotary action of a control knob.

4,483,504

SLIDE RAIL ASSEMBLIES

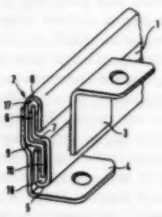
Helmut Düwelshöft, Stadthagen, Fed. Rep. of Germany, assignor to P. A. Rentrop Hubbert & Wagner Fahrzeugausstattunger GmbH & Co. KG, Stadthagen, Fed. Rep. Germany

Filed Dec. 22, 1981, Ser. No. 333,258

Claims priority, application Fed. Rep. of Germany, Dec. 27, 1980, 3049241

Int. Cl.³ F16M *13/00*

U.S. Cl. 248—429 **9 Claims**



1. A guide rail assembly comprising

two parallel guide rails of similar cross-section, each guide rail having

a two legged U-shaped portion defining a relatively deep recess, and

a flanged portion extending away from the free end of one leg of the U-shaped portion, said flanged portion extending parallel to but offset from said one leg, one rail having its U-shaped portion inverted and its flanged portion depending downwardly therefrom, the other rail having the recess of its U-shaped portion engaged by said downwardly depending flanged portion and its flanged portion extending upwardly into engagement with the recess defined by said inverted U-shaped portion, whereby the two rails are constrained for relative longitudinal movement only.

4,483,505

FOLDABLE STAND

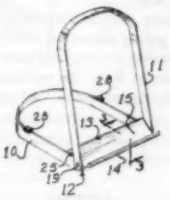
Emil J. Dalbo, Atlanta, Ga., assignor to Dal-Craft, Inc., Tucker, Ga.

Filed Jul. 12, 1982, Ser. No. 397,535

Int. Cl.³ A47B *97/04*

U.S. Cl. 248—447 **3 Claims**

1. A foldable stand including a base member, a supporting member pivotally carried at one end of said base member, and a trough member disposed at the lower end of said supporting member, a pivot member including a pivot pin for pivotally connecting said base member and said supporting member, a locking member carried by said pivot member and pivotal therewith, a locking pin extending into the vertex between said base member and said supporting member for limiting rotation of said supporting member with respect to said base member, said locking pin being carried by said locking member, said trough member being carried by said pivot member and pivotal therewith, said trough member being disposed to receive a card or the like to be supported by said supporting member when said locking pin is in the vertex between said base member and said supporting member, said trough member, said pivot member and said locking member being formed integrally into a pivot body, said pivot body having said pivot pin extending therefrom along a first centerline, and having said



locking pin extending therefrom along a second centerline, said first centerline being parallel to said second centerline, said base member being receivable within the confines of said supporting member such that the two are nested together, said trough member being disposable within said base member by rotation of said pivot body, said base member having a height equal to a first dimension, said supporting member having a width equal to said first dimension so that said base member and said supporting member nest together with a maximum thickness equal to said first dimension, said pivot body being disposable with said trough member within the confines of said base member such that said pivot body is within said maximum thickness, and further including stop means carried by said base member for limiting rotation of said support member with respect to said base member when said base member and said support member are nested.

4,483,506

TEMPORARY SIGNPOST SUPPORT SLEEVE AND TOOL FOR UNSETTING SAME

Donald D. Litwiller, Eureka, Ill., assignor to Compass Enterprises, Inc., Peoria, Ill.

Filed May 15, 1981, Ser. No. 263,878

Int. Cl.³ F16M *13/00*

U.S. Cl. 248—545 **4 Claims**

1. The combination of a post support sleeve temporarily settable in the ground having a vertically elongated, upwardly

open socket number with an upwardly open recess extending along a vertical axis adapted to receive the lower end portion of a post which has a forwardly extending cantilever crossbar, a stabilizing footplate fastened across the bottom end of said socket member and extending cantileverly forwardly therefrom to stabilize the sleeve against forward tilting dislocation under the forward overhanging weight of the crossbar, and a spike fastened to the underside of said horizontal footplate and extending downwardly along the vertical axis of said socket member, and unsetting means for removing the sleeve after the spike has been driven into the ground up to the footplate, comprising:

(a) a first interlocking means on the underside of the footplate at the rear end thereof;

(b) a generally L-shaped lever with a relatively long vertical arm and a relatively short horizontal arm interconnected at a bend;

(c) a hammer lug relatively wider than the lever fastened outwardly across the backside of the lever at the bend in position for engagement by a hammer to drive the forward end of the short arm into the ground beneath the rear end of said footplate; and

(d) a second interlocking means on the upper side of the forward end of said short arm being dimensioned and proportional to engage said first interlocking means on the underside of the footplate when driven into the ground by hammer blows on said hammer lug;

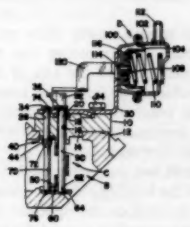
whereby, after the spike has been driven into the ground to set the sleeve, it can be unset by blows applied to the hammer lug to drive the forward end of the short arm into the ground beneath the sleeve to engage said first and second interlocking means followed by pulling the long arm to rotate the lever about the hammer lug acting as a fulcrum against the ground while the forward end of the footplate acts as a fulcrum for the footplate against the ground to hold the socket member substantially erect during initial loosening of the spike.

4,483,507

MANIFOLD CROSS-OVER CONTROL VALVE

David P. Clark, Battlecreek, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed May 25, 1982, Ser. No. 381,861
Int. Cl.³ F16K *1/22*
U.S. Cl. 251—58 **18 Claims**



1. A control valve comprising:

a mounting base;

a peripheral frame defining an aperture therethrough and extending transverse to the mounting base;

a bottom plate connected with the frame opposite the mounting base and extending substantially parallel to the mounting base;

a valving member disposed adjacent the peripheral frame for selectively opening and closing the frame aperture;

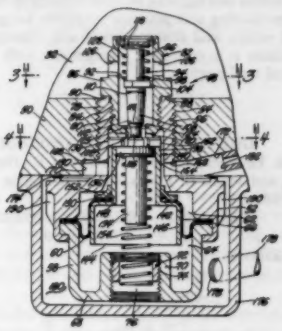
a mechanical fastening means for mechanically fastening the frame with the mounting base, the mechanical fastening means further being operatively connected with the bottom plate, whereby the bottom plate is connected with the mounting base by both the frame and the mechanical fastening means.

4,483,508

GRADIENT POWER VALVE ASSEMBLY

Keith D. Marsh, St. Clair Shores, and Roy O. Erickson, Utica, both of Mich., assignors to Colt Industries Operating Corp, New York, N.Y.

Filed Feb. 22, 1982, Ser. No. 351,269
Int. Cl.³ F16K *31/385*
U.S. Cl. 251—61.3 **18 Claims**



1. A gradient power valve assembly, comprising power valve housing means, first passage means formed in said housing means for communicating between a source of fuel generally upstream thereof and second fuel passage means generally downstream thereof, a valving member generally axially slidably received in said housing means for varying the rate of fuel flow through said first passage means, first spring means effective for continually urging said valving member toward a first nominally closed position, second spring means effective to overcome the force of said first spring means to move said valving member against the force of said first spring means toward a second position whereat a predetermined maximum effective flow area is defined as between said valving member and said first passage means, and pressure responsive diaphragm means operatively connected to said second spring means and effective when a sufficient pressure differential is experienced across said diaphragm means to prevent said second spring means from moving said valving member from said first position toward said second position, wherein said power valve housing means comprises a valve seat body, said first passage means comprising a portion of said valve seat body, wherein said valve seat body comprises internal chamber means, said internal chamber means containing said valving member for axial movement therein toward and away from said first passage means, wherein said first spring means is situated in said internal chamber means and operatively connected to said valving member as to continually resiliently urge said valving member toward said first position, said valve seat body further comprising port means for completing communication between said source of fuel and said internal chamber means, wherein said power valve housing means comprises a housing body, said diaphragm means being situated internally of said housing body and being peripherally sealingly secured thereto, said diaphragm means comprising a flexible pressure responsive movable diaphragm, a generally tubular actuator means situated generally within said housing body and extending through said diaphragm generally centrally thereof, means retaining said actuator means to said diaphragm, wherein said valve seat body is threadably secured to said housing body, wherein said housing body is in turn threaded for engagement with associated support structure, wherein said actuator means is guidingly slidably received within said housing body for

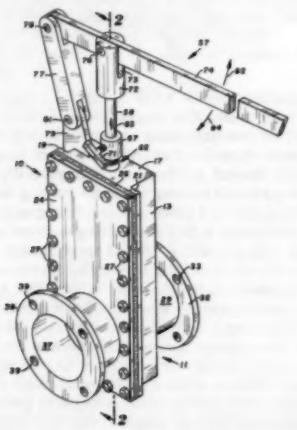
movement toward and away from said valve seat body and said valving member, wherein said second spring means is contained within said housing body and at least partially received within said tubular actuator means, wherein said second fuel passage means is formed in said housing body, and selectively adjustable spring seat means operatively engaging said second spring means, wherein said actuator means comprises a generally tubular member having first and second tubular open ends, wherein said first open end is of a substantially smaller diameter than said second open end, wherein said actuator further comprises a generally cylindrical wall portion closing said first end, wherein said cylindrical wall portion is in sliding contact within said housing body as to thereby serve as guiding means for causing said actuator means to be guiding slidably received within said housing body and wherein said second spring means is in operative engagement with said generally cylindrical wall portion.

4,483,509

GUILLOTINE VALVE ASSEMBLY

Ronald B. Lewcock, 12982 Nicollet Ave. S., Burnsville, Minn. 55337, and James D. Lyons, 445 E. Arlington Ave., St. Paul, Minn. 55101

Filed Jun. 21, 1982, Ser. No. 390,324
Int. Cl.³ F16K *25/00*
U.S. Cl. 251—86 **26 Claims**



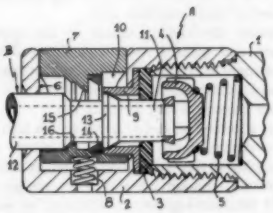
1. A valve assembly comprising: housing means having a valving chamber and an inlet opening and outlet opening in communication with the chamber, each opening having a fluid flow passage with a fluid flow axis, said housing means includes a body having laterally spaced side walls, end walls, and a first wall secured to the side walls and end walls, said first wall having said inlet opening, said side walls and end walls surrounding said valving chamber, a second wall mounted on the side walls and end walls closing said valving chamber, said second wall having the outlet opening, valving means located in said chamber movable generally transverse of the fluid flow axis between an open position allowing fluid to flow through said chamber, means for moving the valving means generally transverse of the fluid flow passage between said open and closed positions thereof, resilient means on said housing means within said chamber surrounding one of said openings, said resilient means being a sheet of resilient material bonded to the second wall and surrounding the outlet opening, resilient material having a continuous outer peripheral portion interposed between the second wall and side walls and end walls whereby the second wall is mounted in sealed relation relative to the body, said sheet of resilient material having a continuous outer peripheral portion interposed between the second wall and side walls and end walls whereby the second wall is mounted in sealed relation relative to the body, and means in said chamber engageable with said valving means for moving the valving means into engagement with said resilient means when the valving means is transversely moved to the closed position and allowing the valving means to move away from the resilient means on transverse movement of the valving means to the open position thereof.

4,483,510

FAST-FIT UNIONS FOR REMOVABLY JOINING PIPES

Joseph Palau, Saint-Jorioz, and Jean-Luc Burquier, Veyrier du Lac, both of France, assignors to S.A. Des Etablissements Staubli (France), Faverges, France

Filed Sep. 27, 1982, Ser. No. 424,719
Claims priority, application France, Oct. 20, 1981, 81 19800
Int. Cl.³ F16L *29/00*
U.S. Cl. 251—149.6 **1 Claim**



1. An improved fast-fit union for removably joining two pipes together, the union being of the type including a male element having an annular shoulder near its free end insertable axially into the free end of a mating female element having a valve therein opened by the free end of the male element when fully inserted, the female element having a transverse bore located between its free end and the valve and the bore slidably supporting a transversely inwardly displaceable locking element which is spring-urged to retract to a rest position and the locking element having an opening extending axially with respect to the female element through which the free end of the male element passes when inserted, the improvement comprising:

(a) three teeth spaced axially from each other along the female element and extending into the opening of the locking element toward the axis of the female element, said teeth including an innermost tooth located closest to the valve, an outermost tooth located closest to the free end of the female element, and a central tooth located between the other teeth;

(b) the innermost and outermost teeth being located on the same side of the locking element opening, and the central tooth being located on the opposite side of said opening therefrom and extending toward the innermost and outermost teeth, and the teeth being oriented such that inward displacement of the locking element displaces the innermost and outermost teeth away from the axis of the female element and displaces said central tooth toward said axis;

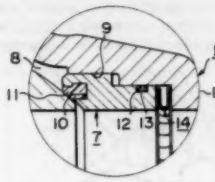
(c) whereby a first inward displacement of the locking element releases the innermost tooth from the shoulder on the male element so that the male element moves away from the valve and the shoulder latches against the central tooth, and whereby release of the locking element to retract outwardly to said rest position releases the central tooth from the shoulder so that the male element moves further away from the valve and is vented, and whereby a second inward displacement of the locking element releases the outermost tooth from said shoulder.

4,483,511

VALVE ASSEMBLY INCLUDING ELASTIC SEALS

Kazuhiko Kushida, and Ryoji Suyama, both of Saitama, Japan, assignors to Kitamura Valve Mfg. Co., Ltd., Tokyo, Japan

Filed Sep. 15, 1983, Ser. No. 532,398
Claims priority, application Japan, May 18, 1983, 58-85698
Int. Cl.³ F16K *25/00*
U.S. Cl. 251—174 17 Claims



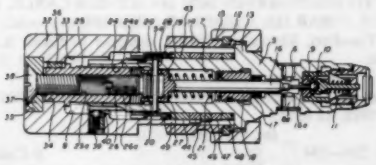
1. A valve assembly including a means for biasing a valve seat in a trunnion type valve such as a ball valve, comprising:
a valve casing;
a valve seat retainer which is slidably disposed in the valve casing;
a valve seat which is defined at one end of the valve seat retainer in a manner that is adapted to engage with a valve member in a sealing relation; and
a means for biasing the valve seat toward the valve member, interposed between the other end of the valve seat retainer and a shoulder defined in the valve casing;
wherein the biasing means is comprised of an annular composite spring including at least three spring elements each having a substantially U-shaped profile and a connecting ring which holds the spring elements in a substantially circular arrangement.

4,483,512

SLOW OPENING VALVE

Donald F. Drapeau, South Hadley Falls, Mass., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 25, 1982, Ser. No. 392,104
Int. Cl.³ F16K *31/44*
U.S. Cl. 251—265 5 Claims



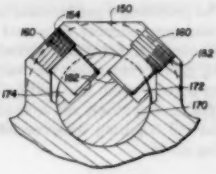
1. A valve comprising a hollow, cylindrical body, a valve seat and a valve member at one end of said body, a valve actuator for said valve member extending through said body, a handle rotatable on said body, differential drive means between said handle and said valve actuator adapted to cause, during opening movement of said valve, relatively slow initial opening of said valve and, thereafter, substantially faster movement thereof, a plurality of stop rings received about said body in side-by-side relationship, means to urge said rings together for producing frictional resistance between abutting edges thereof, lugs on said handles and said rings for serial engagement of said rings by said handle to uniformly resist handle rotation independently of the extent of hand rotation, and a fixed stop on said body to limit rotation of said rings and handle to prevent overstressing of said differential drive means.

4,483,513

PIN CONNECTION OF A SHAFT TO CLOSURE MEMBER OF A ROTARY VALVE

Anthony C. Summers, St. Cloud, Minn., assignor to General Signal Corporation, Stamford, Conn.

Filed Aug. 9, 1982, Ser. No. 406,344
Int. Cl.³ F16K *1/22*
U.S. Cl. 251—308 12 Claims



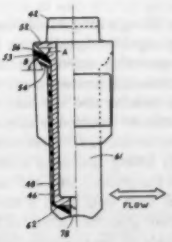
1. In a rotary valve having a closure member, at least one bore in said closure member, a shaft in said bore for rotatably mounting said closure member to a valve housing and a pin extending from said closure member into said shaft to secure said closure member to said shaft, the improvement comprising:
a pair of threaded apertures in said closure member;
a pair of recesses in said shaft each aligned with a corresponding aperture in said closure member;
a pair of pins threadably received in a respective closure member aperture and extending into a corresponding shaft recess;
said shaft recesses being dimensioned to place one of said pins under compression along the axis of said one pin and the other of pins under shear for clockwise rotation and said other pin under compression along the axis of said other pin and said one pin under shear for counterclockwise rotation.

4,483,514

GATE MEMBER FOR RESILIENT-SEATED GATE VALVE

Paul G. Kennedy, Horseheads, N.Y., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Apr. 8, 1982, Ser. No. 366,633
Int. Cl.³ F16K *3/314*
U.S. Cl. 251—327 32 Claims



1. A gate member for a gate valve including a valve body forming a valve chamber having a flow path therethrough, an opening providing access to the interior of the valve chamber for translation of said gate member into the valve chamber transverse to the flow path into a closed position and a ledge on at least a part of the periphery of the opening outside the valve chamber, said gate member comprising:
a lip for overlapping the ledge when said gate member is in

the closed position to form a sealing space between said lip and said ledge; and

a seal of resilient material on said lip for compression in said sealing space to substantially prevent flow therethrough when said gate member is closed, said seal having, at a region thereof that is closer to the flow path, a bead portion thicker when uncompressed than the width of said sealing space for contacting the ledge when said gate member reaches a nearly closed position and, at a region thereof that is more remote from the flow path, a clearance portion for providing a gap between said seal and the ledge when said gate member is in said nearly closed position so to control said seal as it is compressed by the further closing gate member that the material displaced from said bead portion yields into said gap, ensuring that said seal fills said sealing space, and to reduce the amount of resilient material requiring compression to effectively seal said sealing space.

4,483,515

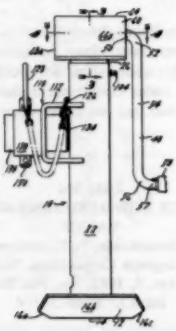
LIFTING JACK AND COVER THEREFOR

Michael C. Maryonovich, Whitefish Bay, Wis., assignor to Masco Corporation, Taylor, Mich.

Filed Aug. 26, 1982, Ser. No. 411,710

Int. Cl.³ B66F *3/18*

U.S. Cl. 254—103 **6 Claims**



1. A lifting jack for lifting a load, said lifting jack comprising a first frame member capable of resting on the ground, a second frame member movably interconnected with said first frame member, interconnecting means capable of interconnecting said second frame member and said load, selectively operable drive means capable of selectively displacing said second frame member relative to said first frame member and, thereby capable of selectively lifting said load when said first frame member is resting on the ground and said second frame member is interconnected with said load, a shaft interconnected with said load, said shaft interconnected with said drive means and selectively rotatable to operate said drive means, a cover for said drive means, said cover eremovably interconnected to said drive shaft; said cover having a lower portion with aligned apertures and slots extending from each aperture to an open end of said cover; said slots having a width less than the diameter of said aperture; said cover being made of resilient material such that said lower portion on each side of each slot being deformable for insertion of a portion of said shaft and being restorable to an undeflected position when said shaft is within said aperture.

4,483,516

BAND-TENSIONING DEVICE

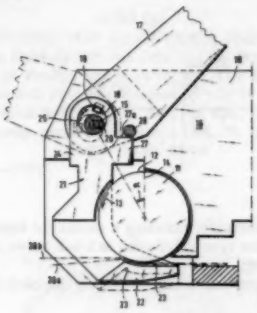
Hubert Wehr, Bornheim, Fed. Rep. of Germany, assignor to Cyklop International Emil Hoffmann, KG, Fed. Rep. of Germany

Filed May 10, 1982, Ser. No. 376,577

Claims priority, application Fed. Rep. of Germany, May 12, 1981, 3118711

Int. Cl.³ B65B *13/22*; B21F *9/02*

U.S. Cl. 254—199 **9 Claims**



2. A band tensioning device comprising:

a rotatable tensioning wheel having a surface adapted to engage frictionally a portion of a band to be tensioned;

abutment means having an abutment surface adapted to cooperate with said surface of the wheel;

a movable lever pivotally connected to the device having an abutment member adapted to engage the abutment surface of said abutment means; and

coupling means for coupling said lever and abutment means so that said movable lever is movable to effect movement of the abutment means relative to the wheel, said movement being effectable to cause the abutment surface to urge a band against said surface of the tensioning wheel to be frictionally engaged thereby so that rotation of the wheel tends to draw the band along with it, so as to place it in tension; said abutment means being movable relative to the wheel transversely to the abutment surface.

4,483,517

TRACTIVE APPARATUS FOR HAULING A CABLE, A BAR OR A SIMILAR MEMBER

Michel Cavalieri, Vincennes, France, assignor to Secalt S.A., France

Filed Apr. 1, 1983, Ser. No. 481,124

Claims priority, application France, Apr. 1, 1982, 82 05678; Apr. 2, 1982, 82 05765

Int. Cl.³ B66D *3/02*

U.S. Cl. 254—254 **9 Claims**

1. An apparatus for pulling a cable, a bar or a wire, which comprises:

(a) a guide bar having an I section,

(b) an operating lever pivoted at a forward end of said guide bar,

(c) two clamping mechanisms disposed one behind the other and each comprising:

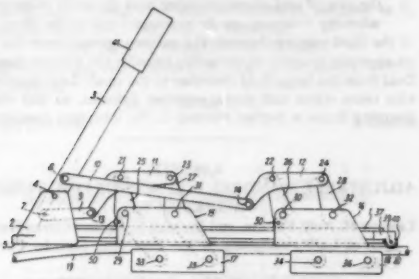
(d) a hollow upper jaw through which passes said guide bar and adapted to slide along said guide bar, the lower face of the hollow upper jaw presenting a clamping profile such as a groove,

(e) a movable lower jaw disposed under said upper jaw and having an upper face which presents a clamping profile such as a groove adapted to co-act with said clamping profile of the upper jaw to ensure the clamping of a cable or bar,

(f) clamping links disposed on each side of said clamping mechanism, each clamping link being pivoted at an intermediate part to the upper jaw and at a lower part to the lower jaw,

(g) side plates pivoted at the upper ends of said clamping links,

(h) at least one pre-clamping spring acting on one of said clamping links to urge same to a position which ensures a clamping of the cable or bar between said upper and lower jaws, said pre-clamping spring being disposed inside the hollow body of the upper jaw and bearing by one end against a transverse portion of the forward end of the upper jaw while its opposite end engages a lateral



projection of the clamping links, said lateral projection passing through a side recess of the upper body of the upper jaw,

(i) a first connecting link pivoted on the one hand to the forward end of the side plates of a first of said two clamping mechanisms and on the other hand to the lower end of the operating lever at a level under the pivot axis of said operating lever to the end of the guide bar, and

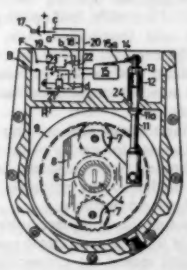
(j) a second connecting link pivoted on the one hand to the forward end of the side plates of the second of said two clamping mechanisms and on the other hand to the lower end of the operating lever at a level above the pivot axis of said operating lever to the end of the guide bar.

4,483,518

DEVICE FOR PREVENTING OVERLOAD OF A WINCH

Rune L. Geschwind, Vansbro, Sweden, assignor to Sepson AB, Sweden

Filed May 26, 1982, Ser. No. 382,168
Claims priority, application Sweden, Jun. 1, 1981, 8103431
Int. Cl.³ B66D *1/50, 1/22*
U.S. Cl. 254—274 **5 Claims**



1. A device for preventing overload of a winch mounted on a vehicle, for instance, the winch including a line drum, a motor, a planetary gearing between the line drum and the motor and a sensing means coupled to a device, which interrupts further operation of the winch when overloaded, the sensing means including a planet carrier of the planetary gearing, characterized in that the planet carrier is rotatable to a limited extent against the action of a spring force to actuate a switch forming part of the device which interrupts further operation of the winch when the winch is overloaded, and circuit means operatively connected to said switch and to said motor for maintaining the interruption in operation of the winch when overloaded, said circuit means comprising:

(a) a relay having a first state for supplying current to said motor and a second state disconnecting the current supply from said motor, said relay normally being in said first state;

(b) means for connecting said switch to said relay to switch said relay to said second state in response to operation of said switch; and

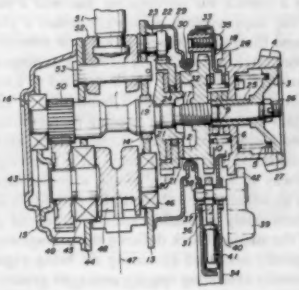
(c) means for resetting said relay to said first state when the cause for the overload has been set aside.

4,483,519

IDLING DEVICE FOR LEVER HOIST

Takayoshi Nakamura, Atsugi, Japan, assignor to Kabushiki Kaisha Kito, Yamanashi, Japan

Filed Jun. 24, 1983, Ser. No. 507,362
Claims priority, application Japan, Jul. 5, 1982, 57-115546
Int. Cl.³ B66D *1/14;* F16D *19/00*
U.S. Cl. 254—350 **7 Claims**



1. An idling device for a lever hoist including a change gear provided on a driving member threadedly engaged on a driving shaft for driving a sheave winding up thereabout a chain, rope or the like for a load, an operating lever rockable about said driving member by a hand, a winding-up driving pawl engageable with teeth of said change gear and driven by said operating lever in a winding-up direction for the load, and a braking assembly preventing said change gear from being driven from a side of said sheave and being clamped and released by rotative movement of said driving member relative to said driving shaft, said device comprising an anchoring member fixed to an end of said driving shaft on an opposite side of said braking assembly with respect to said driving member, a manually operatable knob arranged between said driving member and said anchoring member and fitted rotatably and axially slidably on said driving shaft relative thereto, a brake releasing torsion spring arranged between said manually operatable knob and said anchoring member to rotate said manually operatable knob into a brake releasing direction relative to said driving shaft, a connecting torsion spring arranged between said driving member and said manually operatable knob for rotating said driving member into a brake clamping direction relative to said manually operatable knob and connecting said driving member and said manually operatable knob, brake clamped position holding means for preventing said driving member from rotating into a brake releasing direction when said braking assembly is clamped, and brake over-released preventing means for preventing said driving member from

further rotating into said brake releasing direction when said braking assembly is suitably released.

4,483,520

DEVICE FOR INTRODUCING GAS INTO MOLTEN METAL

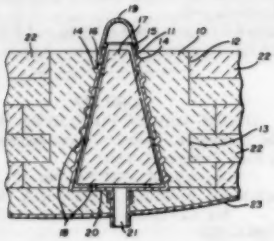
Michael D. LaBate, 115 Hazen Ave., Ellwood City, Pa. 16117

Filed Sep. 14, 1983, Ser. No. 531,851

The portion of the term of this patent subsequent to Aug. 2, 2000, has been disclaimed.

Int. Cl.³ C21C *5/48*

U.S. Cl. 266—220 **8 Claims**



1. In a device for introducing gas into a mass of molten metal, the improvement which comprises a plug and a shell positioned thereabout in spaced relation thereto so as to form a gas conduit, a stirring block having a passageway extending therethrough, said stirring block adapted to form a portion of a refractory lining in a vessel containing a mass of molten metal, said vessel having an opening therein in communication with said passageway in said stirring block, said plug and the shell positioned thereabout being of a size engagable in said passageway in said stirring block, a continuously extending, spirally arranged rib on the exterior of said shell and a matching continuously extending spirally arranged groove in the wall of the stirring block defining the passageway, said continuous spirally arranged extending rib being registrable in said continuously extending spirally arranged groove so as to form a continuous seal between said shell and said stirring block when said shell and plug are rotated sufficiently to engage said rib in said groove.

4,483,521

RUBBER AND FLUID TYPE VIBRATION DAMPER

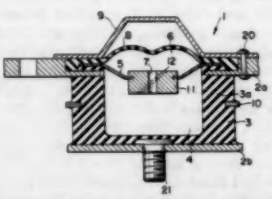
Toshihiko Kakimoto, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 20, 1982, Ser. No. 380,355

Claims priority, application Japan, Jul. 1, 1981, 56-103520; Oct. 1, 1981, 56-146222[U]

Int. Cl.³ F16F *1/36, 9/10*; B60K *5/12*

U.S. Cl. 267—8 R **8 Claims**



1. A vibration damper for preventing transmission of vibrations between two independently supported members, which comprises:

(a) two independent frames, one of which is fixed to one member and the other of which is fixed to the other member;

(b) an elastic member disposed between said two frames and fixed to said two frames;

(c) a diaphragm fixed to said elastic member to define a fluid chamber filled up with a viscous damping fluid; and

(d) a partition disposed within the fluid chamber to divide the fluid chamber into a large fluid chamber and a small fluid chamber, said partition being provided with:

(1) a main passageway communicating between the large and small fluid chambers in the direction of the axis of said elastic member at the center of said partition; and

(2) at least one subpassageway communicating between the large and small fluid chambers in the direction oblique to the axis of said elastic member near the main passageway, whereby vortexes can be produced due to the flow of the fluid passing through the subpassageway near the main passageway in order to smoothly transfer the viscous damping fluid from the large fluid chamber to the small fluid chamber or vice versa when said elastic member deforms, so that viscous damping force is further exerted to the vibration damper.

4,483,522

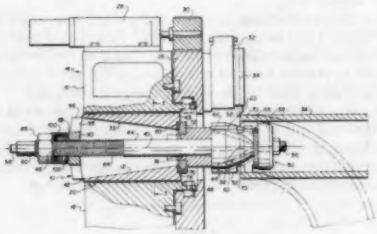
ADJUSTABLE MANDREL FOR SUPPORTING TUBULAR WORKPIECES

Lawson H. Nall, Folsom, and Richard E. Miller, Citrus Heights, both of Calif., assignors to Tri Tool Inc., Rancho Cordova, Calif.

Filed Aug. 9, 1982, Ser. No. 406,540

Int. Cl.³ B65H *75/24*

U.S. Cl. 269—48.1 **9 Claims**



1. A mandrel for adjustably holding a tubular workpiece during a tube end preparation machining procedure utilizing a cutting tool including a cutter element movable about a circular orbital path in a cutting plane, the tool and cutter element arranged to cooperate with the mandrel, comprising:

a central body extending along a longitudinal axis and including a longitudinal opening therein terminating at the forward end of the body, said opening lying in a common plane with said longitudinal axis, said central body adapted to be engaged by and secured in fixed position relative to a tool with which the mandrel is to cooperate so that said mandrel longitudinal axis intersects a cutting plane of such tool;

a shaft extending through said opening and terminating at a distal end disposed forwardly of the central body;

a workpiece holder means adjacent the distal end of said shaft, said holder means movable between workpiece holding and release positions;

means for actuating the workpiece holder means to and from its workpiece holding and release positions;

pivot connection means for connecting said shaft to said central body, said pivot connection means arranged to permit said shaft to pivot about a pivot center located adjacent its distal end on said longitudinal axis of said central body at the location on said axis of said workpiece holder means, the geometry of said central body and shaft enabling said pivot center to be disposed at an intersection

point between said longitudinal axis of said central body and a cutting plane of a tool with which the mandrel is adapted to cooperate.

motion limiting means associated with the central body and shaft for preventing motion of said shaft relative to said central body except pivotal motion about said pivot center within a single plane including said longitudinal axis;

locking means for releasably securing said shaft against pivotal motion.

4,483,523

ARRANGEMENT ON COORDINATE TABLE OF PROCESSING MACHINE FOR CARRIAGE DRIVE

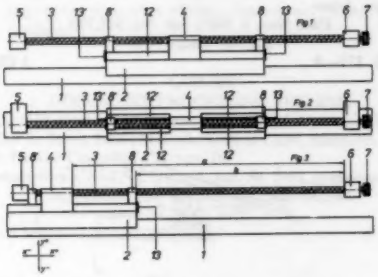
Walter Bredow, Alfeld, Fed. Rep. of Germany, assignor to C. Behrens AG, Alfeld, Fed. Rep. of Germany

Filed Sep. 27, 1982, Ser. No. 424,954

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1981, 3139031

Int. Cl.³ B23Q *3/18*

U.S. Cl. 269—60 **9 Claims**



1. An arrangement on a coordinate table of a processing machine for driving a carriage (2) movable along an X-axis in two opposite directions, comprising displacing means having a ball screw nut carried by the carriage, and a ball screw cooperating with said ball screw nut and having two ends;

two end supports (5, 6) each provided at the respective end of said ball screw (3) and being stationary relative to the carriage (2);

two additional supports (8, 8') provided for said ball screw and arranged on the carriage at opposite sides of said nut and movable relative to the carriage in direction of its movement;

two stationary abutments (13, 13') each arranged at a respective one of the ends of the carriage and limiting a movement stroke of a respective one of said additional supports (8, 8') when the latter abut against the respective stationary abutment;

two releasable abutment locks (14) provided on said carriage and being operative so that each of the additional supports (8, 8') is locked with the carriage when a respective one of said additional supports abuts against a respective one of said stationary abutments (13, 13') or released from the carriage when, upon a further movement of the carriage, the respective one of the additional supports runs against the respective one of said end supports (5, 6); and

two additional releasable locks (16) each arranged between each of said end supports (5, 6) and a respective one of the additional supports (8, 8') and being operative so that during a reverse movement of the carriage a respective one of the additional supports (8, 8') is coupled with the respective one of said end supports (5, 6) until the respective one of the additional supports again abuts against the respective one of the stationary abutments (13, 13') and is locked with the carriage.

4,483,524

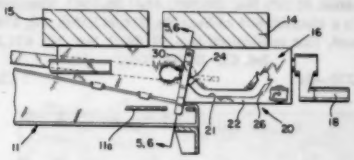
UNITARY LATCHING AND RELEASE MEANS FOR PORTABLE FOLDABLE WORKBENCH

Frank Basten, Brockville, and Peter Oxley, Mallorytown, both of Canada, assignors to Black & Decker Inc., Newark, Del.

Division of Ser. No. 334,433, Dec. 24, 1981, Pat. No. 4,442,779. This application Jan. 31, 1984, Ser. No. 575,605

Int. Cl.³ A47B *3/00*; B25B *1/22*

U.S. Cl. 269—139 **15 Claims**



1. In a portable workbench having an erected position and a storage position, the combination of a base, a table formed integrally with a vise and including a pair of vise jaws movable relative to each other for clamping a workpiece therebetween, a supporting structure between the base and the table, the supporting structure including a pair of spaced vise brackets, means including a pair of independently-operable screw-threaded rods carried by the brackets, respectively, for moving the vise jaws relative to one another, means for collapsing the supporting structure to enable the workbench to be moved from its erected position into its storage position, first latching means to retain the workbench in its erected position, second latching means to retain the workbench in its storage position, and a single unitary means selectively operable in either the erected or storage position of the workbench to release the first and second latching means, respectively, to thereafter enable the workbench to be moved from one position into another position, said last-named means including a single manually-manipulatable member extending laterally outwardly of each bracket.

4,483,525

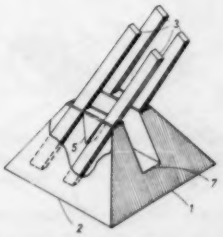
SAWBUCK

Richard Thomas, 10360 Occidental Rd., Sebastopol, Calif. 95472

Filed Sep. 26, 1983, Ser. No. 535,424

Int. Cl.³ B65D *19/44*

U.S. Cl. 269—295 **1 Claim**



1. A sawbuck comprising a rectangular base, from said base there are two upwardly projecting facing double walls defining an opening between the facing walls, the double walls include outer and inner walls, a narrow opening is formed between the said outer and inner walls for holding two slats; the said slats are held firmly in said narrow opening by a triangular separator installed between the said inner and outer walls, the outer walls slant upwardly and inwardly from said base; two additional walls slant upwardly and inwardly from said

base; the center portion of the additional walls include a cut out portion avoiding the closure of the opening between the facing double walls.

4,483,526

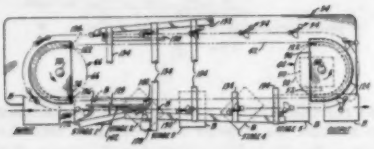
TURNING CONVEYOR AND SELECTED BOOK SIGNATURE TURNING METHOD

Raymond A. Bulka, Oak Lawn, Ill.; George D. Higgins, Kansas City, Mo., and William B. McCain, Hinsdale, Ill., assignors to McCain Manufacturing Corporation, Chicago, Ill.

Continuation of Ser. No. 294,809, Aug. 20, 1981, abandoned, which is a continuation of Ser. No. 116,942, Jan. 30, 1980, abandoned. This application Sep. 22, 1982, Ser. No. 421,380

Int. Cl.³ B65H *39/02*

U.S. Cl. 270—54 **7 Claims**



1. In a system for gathering signatures into books, said system including a conveyor line for transporting the signatures during and after gathering, with one book following a preceding book by a time interval, and a stacking device at the end of the conveyor line, with the time interval between successive books reaching a particular point on the conveyor line defining a book cycle, an improved method of preparing completed books for stacking wherein selected books comprising about half the total number of books moving through the conveyor are turned 180° about an axis perpendicular to the plane of the books as they move along the conveyor line prior to entering the stacking device, while the remaining books are not turned as they move along the conveyor line, the turning of the books occurring over a time interval of at least two book cycles.

4,483,527

SHEET MATERIAL HANDLING DEVICE

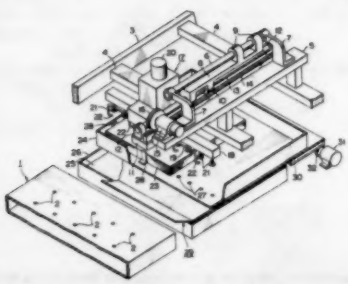
Takeji Hashimoto, Nagaoka, and Osami Umemoto, Kyoto, both of Japan, assignors to Dainippon Screen Seizo Kabushiki Kaisha, Japan

Filed May 5, 1983, Ser. No. 491,888

Claims priority, application Japan, Jun. 15, 1982, 57-102369

Int. Cl.³ B65H *5/22*

U.S. Cl. 271—5 **5 Claims**



1. A sheet material handling device for feeding and taking out sheet material onto and from a work table, comprising:

an unprocessed sheet material storage box with an open top end located beside the work table;

a processed sheet material storage box with an open top end located below the unprocessed sheet material storage box nearer to the work table than the unprocessed sheet material storage box is; and

a suction device including a suction head which is adapted to reciprocate between a position above the work table and another position above the unprocessed sheet material storage box and to move up and down at these two positions and has an appropriate number of suction cups on the lower surface thereof for holding the work table side end of the unprocessed sheet material and an air conduit which is adapted to move integrally with the suction cups and has an appropriate number of air nozzles located nearer to the table than the suction cups are and inclined downwardly toward the suction cups to have their tips at substantially same level as the tips of the suction cups, the air flow from the nozzles guiding the sheet material when it is being conveyed.

4,483,528

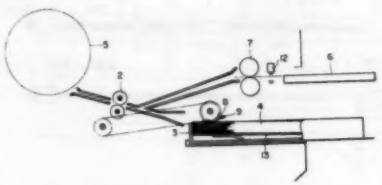
PAPER SHEET FEEDING APPARATUS FOR COPYING MACHINE

Kokichi Takeyama; Kiyoshi Sugawara, and Yasuyuki Fukagawa, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Nov. 3, 1981, Ser. No. 317,733

Int. Cl.³ B65H *7/08*

U.S. Cl. 271—9 **1 Claim**



1. A paper sheet feeding apparatus for a copying machine comprising a manual sheet feeding device having a manual feed roller and an automatic sheet feeding device having a cassette for holding a stack of paper and an automatic feed roll contacting an uppermost one of said paper sheets in said stack, support means for supporting said paper sheet stack in said cassette, bias means for urging said support means towards said automatic feed roller, a paper sheet detector in the vicinity of said manual feed roll for detecting the manual feeding of a paper sheet and providing an output signal in response to such detection and disengaging means responsive to said output signal from said detector for disengaging said automatic feed roll and said uppermost paper sheet when manually fed paper is detected, said disengaging means comprising a shaft, a lever fixedly secured to said shaft for contacting said upper sheet and means for rotating said shaft in response to said detector output signal to thereby press downwardly on said uppermost sheet to move said uppermost sheet away from said automatic feed roller against the force of said bias means.

4,483,529

TAG TRANSPORT METHOD

Michitoshi Watanabe, Nagoya, Japan, assignor to Tomoe Special Machine Co., Ltd., Nagoya, Japan

Division of Ser. No. 206,613, Nov. 13, 1980, Pat. No. 4,391,210. This application Aug. 31, 1982, Ser. No. 413,430

Int. Cl.³ B65H *3/24*

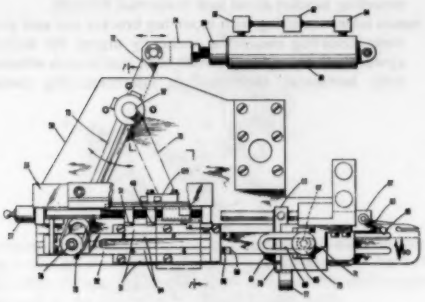
U.S. Cl. 271—131 **8 Claims**

1. A method of moving tags from a tag supply position to a tag attaching station, comprising the steps of:

measuring the width of a tag between a pair of gauge members one of which is movable and the other of which is fixed;

positioning a sensor relative to said tag supply position

through a distance determined by the position of said movable gauge member relative said fixed gauge member; and



moving a tag from said supply position toward said attaching station through a distance determined by said sensor position.

4,483,530

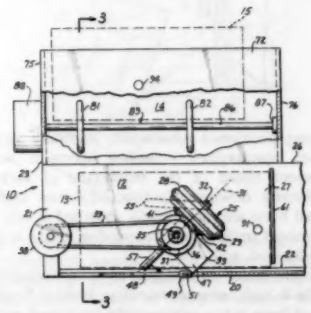
DOCUMENT PROCESSING SYSTEMS

William H. Spencer, Monrovia; Raymond M. McManaman, and Roy A. Teves, both of Glendora, all of Calif., assignors to Bell & Howell Company, Chicago, Ill.

Continuation of Ser. No. 230,145, Jan. 30, 1981, abandoned. This application Feb. 7, 1983, Ser. No. 464,540

Int. Cl.³ B65H 9/04, 5/06

U.S. Cl. 271—236 **6 Claims**



1. In a method of a human operator processing first and second interrelated documents in pairs relative to a processing station, the improvement comprising in combination the steps of:

providing a first document entry station for receiving a first document from said human operator;

providing a second document entry station for receiving a second document from said human operator;

said human operator separating said interrelated first and second documents from each other;

said human operator depositing said first document in said first document entry station while depositing said second document in said second document entry station so as to avoid confusion and error;

transporting said first document from said first document entry station relative to said processing station;

transferring said second document from said second document entry station to said first document entry station; and

transporting said transferred second document from said first document entry station relative to said processing station.

4,483,531

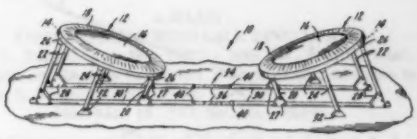
EXERCISE DEVICE

Lynn F. Laseman, 230 N. Elm, Waterman, Ill. 60556; Sam Poulos, 1850 Oakwood Ave., Northbrook, Ill. 60062, and Michael J. Dolder, 1609 Carlisle, DeKalb, Ill. 60115

Filed Jul. 19, 1982, Ser. No. 399,416

Int. Cl.³ A63B 5/08

U.S. Cl. 272—65 **5 Claims**



1. In an exercise device adapted to be positioned on a surface, such as a floor, a pair of trampolines with their upper surfaces inclined toward each other at a slight angle to the horizontal and spaced sufficiently close together such that a person is able to rebound from one surface to the other on alternate feet without touching the floor, and coupling means for fixing the distance between the trampolines so that they remain in their predetermined spaced relationship.

4,483,532

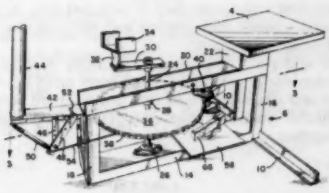
EXERCISE MACHINE

Roger C. Sparks, Ellensburg, Wash., assignor to Second Century Farms, Inc., Ellensburg, Wash.

Filed Jun. 16, 1980, Ser. No. 159,487

Int. Cl.³ A63B 23/04

U.S. Cl. 272—96 **3 Claims**



1. An exercise machine for strengthening the lateral and medial muscles adjacent the knee comprising:

framework means supporting a platform in a stable condition,

crank means rotatable through full revolutions when in use including a crank arm and a stirrup mounted to the framework means adjacent the platform such that a person standing on the platform may comfortably operate the crank means with one foot,

rotatable vertical shaft means extending vertically downward from the crank means, through the upper portion of the framework means and terminating adjacent the lower portion of the framework means, whereby said crank means is operated in a repetitive rotatable motion and

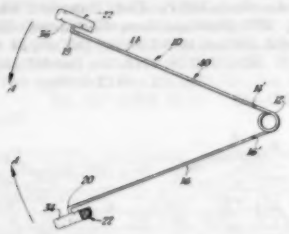
brake means automatically variably resisting rapid rotation of the shaft means.

4,483,533

LEG EXERCISER

Philip Mangiapane, 1201 Roebuck Ct., West Palm Beach, Fla. 33401

Filed Sep. 29, 1982, Ser. No. 427,691
Int. Cl.³ A63B *21/32*
U.S. Cl. 272—137 **1 Claim**



1. A portable leg exerciser for exercising a person's inner thigh muscles comprising:

a continuous elongated cylindrical rod;

said rod having a helix-wound portion at the central portion of each rod, and a pair of arm portions extending divergently from either end of said helix-wound portion;

said pair of arm portions divergent from each other at an acute angle as they leave said helix-wound portion;

a pair of generally conforming inner leg pads, each said pad of said pair of pads positioned at the distal end of a different said pair of arms, one of said pads connected to the outside of each said arm;

said pair of pads movably positionable in relation to one another and to said helix-wound portion for creating exercise resistance force related to the distance between the pads,

each of said arm portions terminating in an outwardly turned right angle bend;

said exerciser further comprising a pair of rigid circular discs of substantially the same radius, one each of said discs being rigidly attached and disposed perpendicularly to the inner face of a respective one of said right angle bends;

each of said pads being circular and of the same radius as each said disc, one each of said pads being abuttingly attached to the outer face of each said disc, the circumferences of each said abutting pad and said disc being substantially coincident;

each said pad comprising a soft inner portion and being substantially enveloped by an outer cloth cover;

each said disc disposed so that said discs are parallel to one another when said distal ends of said arm portions are bent together.

4,483,534

MOUNTING ASSEMBLY OF CONTROLLED RESILIENCE FOR BASKETBALL GOAL HOOP

John F. O'Donnell, Peoria, Ill., assignor to Saflex Systems, Peoria, Ill.

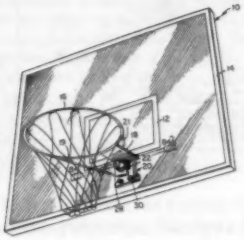
Continuation of Ser. No. 176,721, Aug. 15, 1980, Pat. No. 4,348,022. This application Sep. 7, 1982, Ser. No. 415,417
The portion of the term of this patent subsequent to Feb. 3, 1998, has been disclaimed.
Int. Cl.³ A63B *63/08*
U.S. Cl. 273—1.5 R **10 Claims**

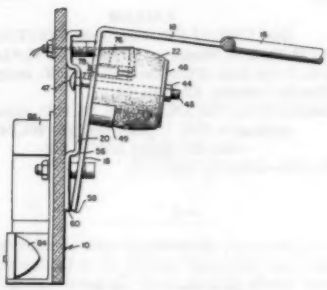
10. A mounting assembly for a normally horizontal basketball goal hoop of the type having an integral mounting bracket thereon for providing a connection of controlled resilience between such goal hoop and a vertical backboard therefor having standardized mounting apertures therein, comprising:

goal hoop mounting means affixed to the front of such backboard by means of threaded connecting members extending through such standardized apertures, and including means forming a horizontal fulcrum spaced away from the front of such backboard,

means connecting such mounting bracket to said mounting means for pivotal movement of such goal hoop and mounting bracket about said horizontal fulcrum,

means interconnecting such mounting bracket and said goal hoop mounting means for resiliently urging the former upwardly to a position in which such goal hoop is substantially horizontal, such resilient interconnecting means





being positioned substantially centrally with respect to such standardized mounting apertures with all parts thereof ahead of the front face of such backboard, whereby downwardly-directed forces applied to such goal hoop are substantially absorbed in said substantially centered resilient interconnecting means in front of such backboard, and

abutment means on said goal hoop mounting means against which such integral mounting bracket bears when such goal hoop is in a substantially horizontal position.

4,483,535

TRIANGLE COMBINATION GAME

Jean-Guy LeCart, 19 Rue Robert Schumann, 95300 Pontoise, France

Filed Dec. 3, 1982, Ser. No. 446,643
Claims priority, application France, Dec. 4, 1981, 81 22707
Int. Cl.³ A63F *9/08*
U.S. Cl. 273—153 S **3 Claims**

1. A game of the puzzle type combining an assembly of components in modifiable combinations by rotation of selected sub-assemblies of components about parallel axes, characterized in that the game comprises at least thirteen components whose general shape is that of an equilateral triangle, each component having two spaced walls connected rigidly by an axis, the components being placed side by side in such a manner as to create sub-assemblies of hexagonal form with each sub-assembly having two components in common with an adjacent sub-assembly, means for holding the components side

by side while permitting rotation of each sub-assembly around its own center, said holding means including an elastic strap passing over the axes of peripheral components of the assembly

between the walls thereof, each hexagonal sub-assembly having a disc located at the center of that sub-assembly between the walls of the components of that sub-assembly and between the axes of the components of that sub-assembly.

4,483,536

DEVICE FOR DETECTION OF SELF-MOVEMENT

George H. Mitchell, 2/6 Vickery St., Bentleigh, Victoria, Australia

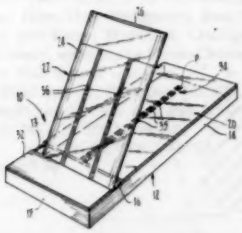
PCT No. PCT/AU82/00019, § 371 Date Sep. 20, 1982, § 102(e) Date Sep. 20, 1982, PCT Pub. No. WO82/03018, PCT Pub. Date Sep. 16, 1982

PCT Filed Mar. 1, 1982, Ser. No. 420,244

Claims priority, application Australia, Mar. 3, 1981, PE7830

Int. Cl.³ A63B *69/36*

U.S. Cl. 273—183 E **9 Claims**



1. A device for detection of self-movement characterized by an optically convergent interface, substantially linear marker means, and positioning means to relatively position the interface and linear marker means so that the marker means is inclined to the interface along a substantial portion of the length of the marker means and extends progressively away from said interface on the same side as the focus or focal line thereof, at least to a position P at which the virtual image of the linear marker means is significantly further displaced from said interface than is the position P in real space.

4,483,537

GOLF BALL

Hiroyoshi Hanada, Fuchu, and Hiroyoshi Adachi, Fukuyama, both of Japan, assignors to Hayakawa Rubber Co., Ltd., Fukuyama, Japan

Filed Jun. 24, 1982, Ser. No. 391,711

Claims priority, application Japan, Jan. 6, 1982, 57-394

Int. Cl.³ A63B *37/12*

U.S. Cl. 273—220 **6 Claims**

1. A golf ball, comprising a solid core with a diameter of 36.5–39.0 mm formed of a thermally cross-linked composition consisting essentially of 100 parts by weight of polybutadiene rubber with at least 90% of cis-1,4 bonds; 15–25 parts by weight of an acid selected from the group consisting of acrylic acid and methacrylic acid, 1–15 parts by weight of an ester selected from the group consisting of acrylic esters and methacrylic esters, 20–70 parts by weight of zinc oxide, and 2–6 parts by weight of an organic peroxide; and a shell with a thickness of 1.8–2.3 mm covering said solid core, said shell being made of a composition consisting essentially of 100 parts by weight of an ionomer resin which consists essentially of a first metallic salt of a copolymer of ethylene and unsaturated carboxylic acid and which has a hardness of 65–70 in terms of Shore hardness D, 0.5–10 parts by weight of a second metallic salt selected from the group consisting of metallic acrylates and metallic methacrylates, and 1–5 parts by weight of a colouring matter.

4,483,538

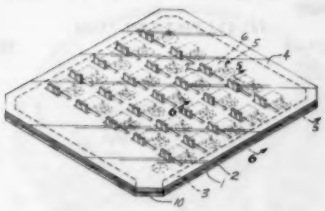
TAMPERPROOF REUSABLE BINGO CARD

Earl L. Koppen, Apt. 333, 13823 - 12th SW., Seattle, Wash. 98166, and Douglas E. Winters, Bothell, Wash., assignors to Earl L. Koppen, Seattle, Wash.

Filed Mar. 15, 1983, Ser. No. 475,440

Int. Cl.³ A63F *3/06*

U.S. Cl. 273—270 **12 Claims**



1. A tamperproof reusable bingo card comprising a plurality of stacked sheets secured together and having an array of bingo numbers, each of said sheets being light-transmitting material such that light can be passed through the entire thickness of the card.

4,483,539

METHOD OF MAKING A CYLINDER HEAD GASKET

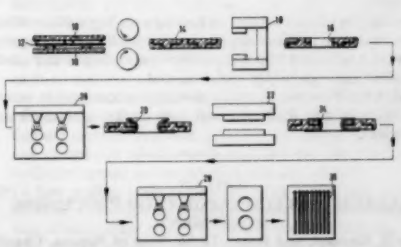
Rudolf Bindel, Grafenberg, and Eugen Ruoff, Urach, both of Fed. Rep. of Germany, assignors to Elring Dichtungswerke GmbH, Fellbach, Fed. Rep. of Germany

Filed Sep. 28, 1983, Ser. No. 536,909

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1982, 3240295; May 13, 1983, 3317501

Int. Cl.³ F16J *15/12*; B05D *1/38*; B29G *5/00*

U.S. Cl. 277—1 **11 Claims**



1. A method for manufacturing a gasket such as a cylinder head gasket having a plate of soft material mixed with a binding means and provided with at least one combustion chamber opening, said method comprising:

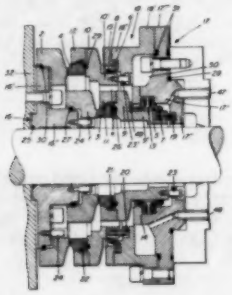
impregnating said plate of soft material with a first impregnating material including polysiloxane;
providing a metallic rim border for said combustion chamber opening;
compressing said plate of soft material at least in some regions thereof by means of pressure;
pressing said first impregnating material while still deformable into optionally provided hollow spaces;
impregnating said plate of soft material with a second impregnating material including polysiloxane;
removing by mechanical means excess amounts of said second impregnating material; and
heat treating said plate of soft material to polymerize said polysiloxane.

4,483,540

OUTBOARD STERNTUBE SEAL FOR OIL-LUBRICATED BEARINGS OF SHIPS

Edgar Bordien, Hamburg, and Hans-Peter Jasch, Berlin, both of Fed. Rep. of Germany, assignors to EG&G Sealol GmbH, Kelkheim, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 464,230, Feb. 7, 1983, abandoned. This application Apr. 9, 1984, Ser. No. 597,874
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1982, 3206080
Int. Cl.³ F16J *9/00, 15/34*
U.S. Cl. 277—2 **10 Claims**



1. An outboard sterntube seal, for an oil-lubricated propeller shaft bearing in the sterntube of a ship, comprising:
coaxially arranged oil-side and water-side seals axially separated by an annular cavity having a drain that conducts water or oil leaking past the oil side and water-side seals through the cavity into the ship's interior;
said oil-side and water-side seals being rotating mechanical seals each having a counterring supporting a slipring to provide radial clearance between the slipring and the shaft;
the slipring of the oil-side seal having a sealing surface which is loaded in its direction of closure by a first retaining ring which is subject to water pressure prevailing in said cavity when said water-side seal fails; and
additional elements which elastically accommodate movements of the shaft and seal said cavity against oil and water.

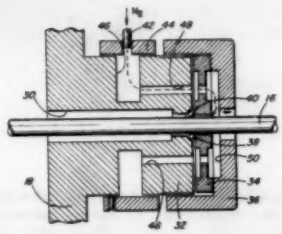
4,483,541

GAS SEAL FOR SEMICONDUCTOR PROCESSING EQUIPMENT

Tibor F. Devenyi, and Iwona Turlik, both of Nepean, Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Apr. 5, 1984, Ser. No. 597,040
Int. Cl.³ F16J *15/40*
U.S. Cl. 277—3 **8 Claims**

1. Equipment for use in the production of semiconductor devices comprising a chamber having first and second zones, a push rod for moving objects within the chamber between the zones, the push rod extending into the chamber through an aperture in a wall thereof, sealing means for sealing a junction region between the push rod and the wall, a clamping arrangement for clamping the sealing means, such clamping acting also to fix the push rod, and means for flooding the sealing means with an inert gas while the clamping arrangement is released to permit movement of the push rod, the flood of inert gas functioning to prevent reactive gas from penetrating past the sealing means into the chamber.

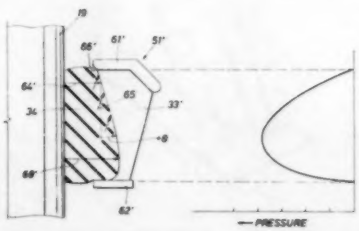


4,483,542

INSERT FOR ANNULAR PACKING UNIT

Joseph H. Hynes, and James A. Burton, both of Houston, Tex., assignors to Hydril Company, Los Angeles, Calif.

Filed Apr. 18, 1983, Ser. No. 485,619
Int. Cl.³ F16J *15/12;* **E21B** *33/06*
U.S. Cl. 277—31 **8 Claims**



1. An insert adapted for use in an annular blowout preventer packing unit having a longitudinal axis, the packer having an annular elastomeric body in which one or more of the inserts are embedded comprising,
top and bottom plates interconnected solely by a generally longitudinal web, the inner edge of the web sloping generally from a relatively smaller radius near the top plate to a relatively greater radius near the bottom plate.

4,483,543

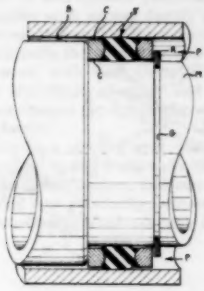
SEALS

Ernest P. Fisher, Jr., Carrollton, and William G. Boyle, Dallas, both of Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Filed Jan. 19, 1983, Ser. No. 459,058
Int. Cl.³ F16J *15/16*
U.S. Cl. 277—188 R **5 Claims**

1. A seal ring comprising end support rings, each said ring having a flat outer end and an inner end convexly radiused tangent to lines forming angles of 15 to 75 degrees, preferably 30 degrees, with the outside and inside support ring surfaces, one said support ring bonded to each end of a resilient material

portion having a cylindrical end section, a middle contoured ring section and another cylindrical end section wherein the outside of said contoured ring section curves radially outward from the outside of one of said cylindrical end sections to a larger diameter and curves radially inward from said larger diameter to the outside of the other end section, and the inside



of said contoured section curves radially inward from the inside of one of said cylindrical end sections to a smaller diameter and curves radially outward from said smaller diameter to the inside of the other cylindrical end section, and said inward and outward curves are blending radii tangent to lines forming angles of 5 to 30 degrees, preferably 15 degrees, with the outside and inside surfaces of said cylindrical end sections.

4,483,544

SOCKET PIPE SEAL FOR CONCRETE PIPES

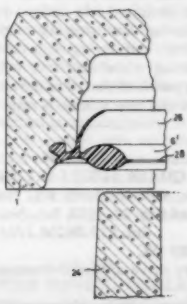
Peter Faerber; Hans-Theo Weingarten; Rudolf Rösgen, all of Leverkusen, and Benno Wedekind, Leichlingen, all of Fed. Rep. of Germany, assignors to Denso-Chemie Wedekind KG, Leverkusen, Fed. Rep. of Germany

Filed Sep. 23, 1982, Ser. No. 422,194

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1981, 3142724; May 25, 1982, 3219522

Int. Cl.³ F16J *15/32*

U.S. Cl. 277—207 A **19 Claims**



1. A socket seal for a concrete pipe defining a socket having an open end delimited by a free edge, an inner wall extending from the free edge and a base remote from the open end, and into the open end of which socket a further member is to be inserted to form a sealed connection, said seal comprising: a sealing ring made of an elastomer material and including a holding portion embedded in the pipe in the region of the outer edge of the socket, a band-shaped fastening portion joined to said holding portion, and a sealing portion joined to said fastening portion and having a configuration such that it has a greater thickness at a point spaced from said fastening portion than at the location where it is joined to said fastening portion, said sealing portion being movable by bending relative to said fastening portion toward the base of the socket from an installation state to an operating state, said ring being configured such that in said operating state one surface of said sealing portion bears against the inner wall of the socket, and such that in said installation state said sealing ring delimits the free edge of the socket, said one surface of said sealing portion is approximately flush with the inner wall of the socket, said sealing portion rests against said fastening portion, said holding portion is joined to the side of said fastening portion which faces away from said sealing portion, and said holding and fastening portions together have a generally T-shaped cross section.

4,483,545

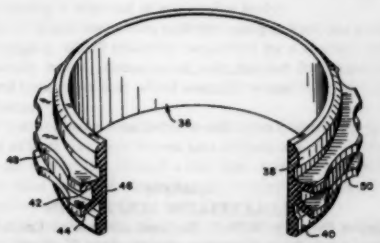
FIRE RESISTANT CONNECTIONS AND DOUBLE RIBBED SEALING MEANS THEREFOR

Robert E. Bush, Houston, Tex., assignor to Gray Tool Company, Houston, Tex.

Filed Feb. 24, 1983, Ser. No. 469,354

Int. Cl.³ F16J *15/08*

U.S. Cl. 277—211 **6 Claims**



1. A connection for effectuating the establishment of a fire resistant connection and seal between mating sealing surfaces comprising:

(a) a continuous seal ring including a base having a first face and a second face, a first seal lip formed integrally with said base so as to project outwardly to a slight extent from said first face of said base adjacent to one end of said base, said first seal lip terminating in a planar sealing surface, a second seal lip formed integrally with said base so as to project outwardly to a slight extent from said first face of said base adjacent to the other end of said base, said second seal lip terminating in a planar sealing surface, said planar sealing surface of said first seal lip and said planar sealing surface of said second seal lip each lying in the same plane, a pair of ribs formed integrally with said base so as to project outwardly from said first face of said base at a location therealong substantially equidistant from said first seal lip and said second seal lip, each of said pair of ribs defining a plane that extends generally perpendicular to said plane of said planar sealing surface of said first seal lip and of said planar sealing surface of said second seal lip, each of said pair of ribs tapering towards one another in the direction of said first face of said base, each of said pair of ribs having a plurality of equally spaced scallops formed therein with said plurality of scallops formed in one of said pair of ribs being aligned with said plurality of scallops formed in the other of said pair of ribs;

(b) a first mating sealing surface having a first portion embodying a configuration complementary to the configuration of said planar sealing surface of said first seal lips, said first mating sealing surface further having a second portion embodying a configuration complementary to the configuration of one of said pair of ribs;

(c) a second mating sealing surface having a first portion embodying a configuration complementary to the configuration of said planar sealing surface of said second seal

lip, said second mating sealing surface further having a second portion embodying a configuration complementary to the configuration of the other of said pair of ribs;

(d) fastening means fastening said first mating sealing surface to said second mating sealing surface;

(e) said continuous seal ring when positioned relative to said first and second mating sealing surfaces for purposes of effectuating the establishment of a fire resistant connection and seal therewith having said planar sealing surface of said first seal lip positioned in sealing engagement with said first portion of said first mating surface, said planar sealing surface of said second seal lip positioned in sealing engagement with said first portion of said second mating surface, said pair of ribs clamped in interposed relation with said first and second mating sealing surfaces and with said one of said pair of ribs engaging said second portion of said first mating sealing surface and said other of said pair of ribs engaging said second portion of said second mating sealing surface, said plurality of scallops formed in each of said pair of ribs providing a clearance space for said fastening means that fasten said first mating sealing surface to said second mating sealing surface.

4,483,546

SELF-LEVELLING SUSPENSION

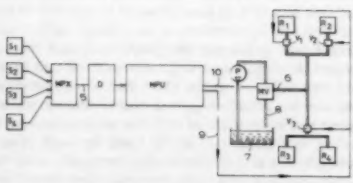
Malcolm Brearley, Solihull, England, assignor to Lucas Industries public limited company, Birmingham, England

Filed Mar. 24, 1982, Ser. No. 361,352

Claims priority, application United Kingdom, Apr. 8, 1981, 8110972

Int. Cl.³ B60G *17/00*

U.S. Cl. 280—6 R **14 Claims**



1. A self-levelling suspension system for adjusting the ride height of a vehicle so that is within acceptable limits of a desired ride height comprising a plurality of suspension units for adjusting the ride height between the sprung and unsprung parts of the vehicle, a respective ride height sensor associated with each suspension unit and adapted to give an output that varies progressively with the ride height in the vicinity of the associated suspension unit, and control means for performing the steps of:

(i) reading each of the outputs at least once,

(ii) selecting the output which corresponds to the sensed ride height that differs most from said desired ride height, and

(iii) applying a correction only to the suspension unit associated with the selected output to adjust it towards said desired right height,

the control means being arranged to repeat steps (i) to (iii) until all the sensed ride heights are within said acceptable limits of said desired ride height.

4,483,547

STEERING DEVICE FOR VEHICLES

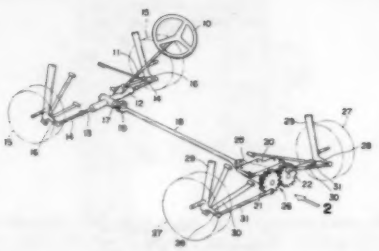
Yoshimi Furukawa, Saitama, and Shoichi Sano, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 12, 1982, Ser. No. 407,433

Claims priority, application Japan, Aug. 12, 1981, 56-127189

Int. Cl.³ B62D *7/14*

U.S. Cl. 280—91 **5 Claims**



1. A steering device for a vehicle including a steering wheel, right and left front wheels, front wheel steering means, right and left rear wheels, rear wheel steering means, a pair of right and left rear wheel steering tie rods for connecting said right and left rear wheels and said rear wheel steering means, and an operating shaft for connecting said front wheel steering means and said rear wheel steering means, said rear wheels being steered along with said front wheels under a steering operation of said steering wheel, wherein:

said rear wheel steering means comprises a plurality of rotary members operatively cooperating so as to rotate with each other;

said operating shaft is operatively connected to the rotational center of one of said rotary members;

the inner ends of said right and left tie rods are connected to two of said rotary members at connecting positions which are displaced from the rotational centers of said rotary members, respectively, said connecting positions being disposed on substantially vertical lines passing through said rotational centers of said rotary members when said steering wheel is set at a neutral position thereof; and

whereby said rear wheels are rotated in the same direction as that of said front wheels under rotation of said rotary members during low steering angle operation of said steering wheel, and during large steering angle operation of said steering wheel said rear wheels are steered in a direction opposite to that of said front wheels or the steering angle of said rear wheels is reset to zero or near zero.

4,483,548

WHEEL CHAIR AUXILIARY DRIVE MEANS

James A. Zirrilo, 6206 Newberry Rd., Indianapolis, Ind. 46256

Filed Sep. 29, 1982, Ser. No. 427,596

Int. Cl.³ B62M *1/14*

U.S. Cl. 280—289 WC **2 Claims**

1. An auxiliary drive apparatus mountable to a wheel chair comprising:

an auxiliary frame removably mountable to a wheel chair, said auxiliary frame including a first pair of posts engaging brackets spaced apart a maximum distance when mounted to said wheel chair, said brackets being movably mounted to said frame and movable apart to a second distance less than said maximum distance to allow mounting and unmounting of the frame to said wheel chair;

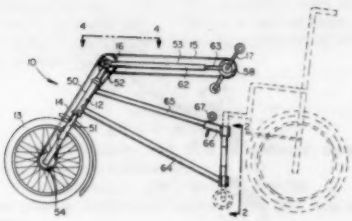
a wheel rotatably mounted to said frame;

a hand crank movably mounted to said frame;

connecting means engaged with said wheel and said hand crank and operable to drive said wheel to move said wheel chair as said hand crank is moved;

adjustment means on said frame and operably associated with said brackets being operable to adjust spacing between said brackets to change the maximum distance said brackets may be spaced apart allowing mounting of said frame to different wheel chairs, said frame including a first telescopically constructed rod with opposite ends upon which said brackets are mounted, said adjustment means including a threaded member having an end fixedly connected to one of said opposite ends and also including a tubular assembly with an end fixedly connected to the other of said opposite ends, said tubular assembly includes a captive, internally threaded, rotatable fastener in meshing engagement with said threaded member which projects into said tubular assembly, said rotatable fastener upon rotation changes the distance between said opposite ends, and wherein:

said frame includes a steering post with a proximal end pivotally mounted to said frame and a distal end with said hand crank mounted thereon; said connecting means includes sprocket means rotatably mounted at said proximal end, a first continuous chain operably connected to said



wheel and said sprocket means, and a second continuous chain operably connected to said hand crank and said sprocket means,

said steering post is telescopically constructed;

said tubular assembly includes a pair of tubes with adjacent ends joined together forming a knee action joint located between said pair of tubes and also between said threaded member and said other opposite end with said tubular assembly further includes a sleeve movably mounted to one of said pair of tubes to hold said pair of tubes straight when positioned around said joint keeping said brackets spaced apart said maximum distance, said sleeve movable to a position allowing said joint to bend moving said brackets apart said second distance, said threaded rod and said pair of tubes extend in a straight line when said sleeve is positioned around said joint, said tubular assembly further includes a helical spring extending around one of said pair of tubes and in contact with said sleeve urging said sleeve to a position extending around said joint; and

said tubular assembly being constructed to position said sleeve at all times apart from said threaded member and said internally threaded rotatable fastener.

4,483,549

VEHICLE TOWING TRAILER

Haruo Nikawa, Amagasaki, Japan, assignor to Toshiki Nikawa, Hyogo, Japan

Filed Nov. 12, 1982, Ser. No. 440,997
Claims priority, application Japan, Jun. 19, 1982, 57-91718[U]
Int. Cl.³ B60P 3/12
U.S. Cl. 280—402 **10 Claims**

1. A vehicle towing trailer of such a type as is trailed by a pulling vehicle to which a front end of the trailer is detachably connected by a hitching means, comprising:

a substantially T-shaped trailer body including an elongated frame extending in parallel with a longitudinal axis of said trailer body, and a cross frame connected to a rear end of said elongated frame and extending transversely of said longitudinal axis;

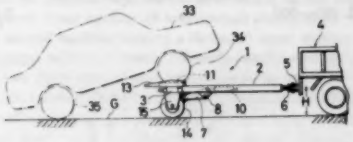
a swivel platform supported on said cross frame and movable in a substantially horizontal plane about a vertical axis;

said swivel platform being adapted to support a portion of a vehicle to be towed;

a pair of wheel supporting frames in each of which a wheel of said vehicle to be towed is seated;

one of said pair of wheel supporting frames being detachably mounted to one end of said platform, and

another of said pair of wheel supporting frames being detachably mounted to another end of said platform;



jack means mounted on said trailer body for lifting and lowering a rear end of said trailer body;

a pair of wheel assemblies each including at least one ground engaging wheel rotatably supported by a bracket and a handle means connected to said bracket for attachment and removal of said wheel assembly to and from said cross frame;

said bracket being detachable to said cross frame by insertion of at least one male means into at least one female means from a front side toward a rear side of said cross frame in an axial direction opposite to a running direction of the trailer; and

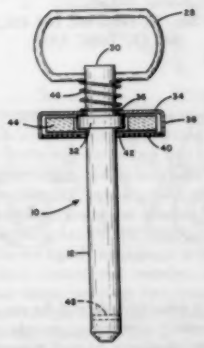
said male and female means being relatively axially slidable with each other for easy engagement and disengagement.

4,483,550

TRAILER HITCH PIN

Ronald F. Dubbe, 356 - 3½ St., Waconia, Minn. 55387

Filed Jul. 27, 1983, Ser. No. 517,630
Int. Cl.³ B60D 1/02
U.S. Cl. 280—515 **8 Claims**



1. A hitch pin for coupling a towed vehicle to a towing vehicle comprising in combination:

(a) a steel shank of a predetermined length and cross-sectional size sufficient to pass completely through aligned apertures in a trailer hitch;

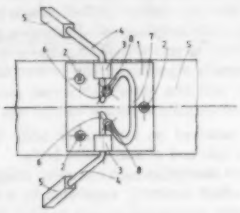
(b) a toroidal case member disposed about said shank proximate an upper end thereof, said case being free to move a limited distance axially along said shank; and

(c) a ring-shaped magnet contained within said case and surrounding said shank.

4,483,551
SKI BRAKE

Jean J. A. Beyl; Jean Bernard, both of Nevers; René Guerreau, Montmarault; Daniel le Faou, Varennes-Vauzelles, and Henri Peyre, Nevers, all of France, assignors to Ste Look, Nevers, France

Filed Aug. 13, 1982, Ser. No. 408,117
Claims priority, application France, Sep. 30, 1981, 81 18388
Int. Cl.³ A63C 7/10
U.S. Cl. 280—605 **7 Claims**

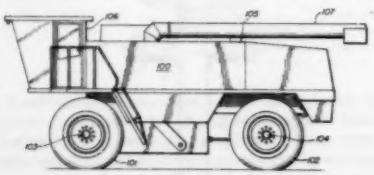


1. A ski brake comprising two braking arms which are pivotally mounted in bearings disposed transversely with respect to the ski but the axes of which are downwardly inclined towards the interior of the ski, said arms being connected together by means of a resilient stirrup-piece located above the ski and capable of undergoing resilient deformation under bending stress in its own plane, wherein said stirrup-piece is pivotally connected to said braking arms by means of articulation, whose axes are perpendicular to the plane of said stirrup-piece.

4,483,552
INDEPENDENT TELESCOPIC SUSPENSION

John P. W. Dorscht, Landmark, Canada, assignor to Versatile Corporation, Vancouver, Canada

Filed Sep. 20, 1982, Ser. No. 420,296
Int. Cl.³ B60G 3/00
U.S. Cl. 280—690 **15 Claims**

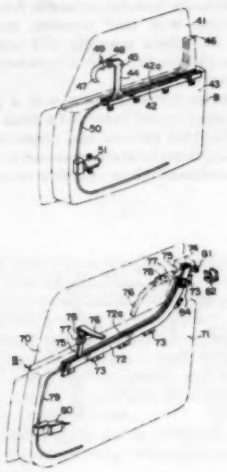


1. A floating axle assembly adapted for use on the frame of a vehicle, said assembly comprising an axle extending transverse to the longitudinal axis of and beneath said vehicle, wheels mounted to each end of said axle, a drag link means for each end of said axle, one end of each of said drag link means being mounted adjacent each end of said axle and extending to an opposite end mounted to said frame in a generally horizontal direction, hydraulic support means above said axle connecting said axle to said frame, said support means and said drag link means allowing restricted reciprocal vertical movement and oscillation of said axle about a longitudinal axis.

4,483,553
PASSIVE SEAT BELT FOR AN AUTOMOBILE

Masashi Nogiwa, Hatano; Yasunao Miyata, Hiratsuka; Tsuyoshi Maeda, Hiratsuka; Hajime Kumada, Hiratsuka, and Yoshitaka Suzuki, Odawara, all of Japan, assignors to Nissan Shatai Co., Ltd., Japan

Filed Nov. 29, 1982, Ser. No. 445,226
Int. Cl.³ B60R 21/10
U.S. Cl. 280—803 **18 Claims**

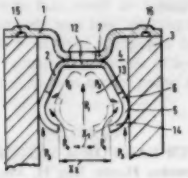


1. A passive seat belt system for a vehicle comprising:
(a) a horizontally extending guide rail for being located on the upper end of a panel of a door of a vehicle, the guide rail having a rear end;
(b) a vertical member having a locking hole defined therein and having a top portion, the vertical member being movable along the guide rail in an upright position, top portion upward;
(c) drive means for being disposed in the door panel and operable for driving the vertical member along the guide rail toward the rear end thereof,
(d) a belt for extending across a seat disposed near the door, the belt having a first end capable of being mounted to the top portion of the vertical member and having a second end opposite the first end for being connected on a side of the seat opposite the door; and
(e) locking means for locking the vertical member at the rear end of the guide rail, the locking means comprising:
(1) a locking member for being mounted near the rear end of the guide rail, the locking member having a movable free end, the free end of the locking member being movable in a locking direction toward the vertical member and in an unlocking direction generally opposite the locking direction; and
(2) biasing means for pushing the free end of the locking member in the locking direction; the vertical member engaging the free end as the drive means drives the vertical member toward the rear end of the guide rail, the vertical member pushing the free end in the unlocking direction until the biasing means pushes the free end in the locking direction into the locking hole, thereby locking the vertical member.

4,483,554
SPLASH GUARD RING FOR PIPE FLANGES

Manfred Ernst, Georg August Zinn-Str. 29, 6054 Rodgau, Fed. Rep. of Germany

Filed Mar. 5, 1982, Ser. No. 355,225
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1981, 3146803
Int. Cl.³ F16L 55/00, 23/00
U.S. Cl. 285—45 11 Claims



1. A splash guard ring for the flanges of connecting pipe members in a pipeline comprising:

a resilient clamp in the form of a premolded open ring;

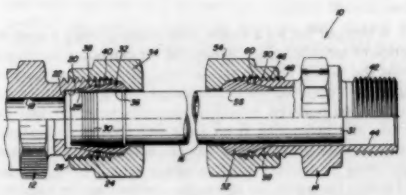
a C-shaped spring member attached to said resilient clamp;

said C-shaped spring member having a plurality of bores for the passage of fluids therethrough.

4,483,555
PIPE COUPLING

Dieter Ludwig, Weinheim, Fed. Rep. of Germany, assignor to Deere & Company, Moline, Ill.

Filed Aug. 2, 1982, Ser. No. 404,189
Claims priority, application European Pat. Off., Aug. 6, 1981, 81303604.3
Int. Cl.³ F16L 19/06
U.S. Cl. 285—169 3 Claims



1. A pipe coupling capable of being repeatedly coupled to and uncoupled from an intervening length of pipe, said intervening length of pipe having serrations formed about the outer periphery of one end, said pipe coupling comprising:

(a) a first union attached to a first pipe and having a through bore formed therein which opens into an enlarged cavity, said cavity having an exposed end which receives said serrated end of said intervening length of pipe, an oppositely aligned shoulder formed within said first union which limits the amount said intervening length of pipe can be inserted therein and a sleeve surrounding said cavity which has an inner surface which tapers towards said shoulder and an external threaded surface;

(b) a compression ring having a threaded internal surface and a tapered external surface, said compression ring being positioned between said serrated end of said intervening length of pipe and said tapered inner surface of said sleeve;

(c) a first backnut having a threaded inner surface which engages with said external threaded surface of said first union, tightening of said first backnut onto said first union causing said compression ring to move axially into engagement with said tapered inner surface of said sleeve and to be compressed such that said threaded internal surface engages said serrated end of said intervening length of pipe and axially restrains said pipe within said cavity;

(d) a second union attached to a second pipe and having a through bore formed therein which receives an opposite end of said intervening length of pipe, said through bore having a diameter larger than the outside diameter of said intervening length of pipe, said second union having an outwardly extending sleeve with an external threaded surface and a tapered inner surface;

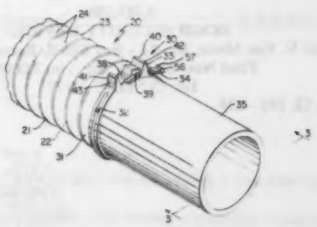
(e) a non-binding compression ring having a smooth bore formed therethrough with a diameter approximately equal to the outside diameter of said intervening length of pipe and an external tapered surface which mates with said tapered inner surface of said second union; and

(f) a second backnut having a threaded inner surface which engages with said external threaded surface of said second union, tightening of said second backnut onto said second union causing said non-binding compression ring to move axially into engagement with said tapered inner surface of said sleeve and be squeezed onto the periphery of said intervening length of pipe, said first and second unions capable of being repeatedly coupled and uncoupled from said intervening length of pipe and said second union permitting longitudinal shifting of said intervening length of pipe relative to said second union.

4,483,556
HOSE CLAMP FOR A WIRE REINFORCED HOSE

William J. LiVolsi, Upper Makefield County, Pa., assignor to Dayco Corporation, Dayton, Ohio

Filed Sep. 22, 1982, Ser. No. 421,180
Int. Cl.³ F16L 33/22
U.S. Cl. 285—252 14 Claims



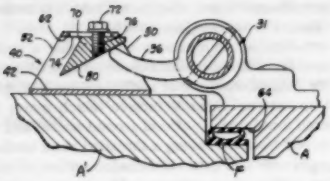
1. In a hose construction comprising a hose made primarily of polymeric material and having reinforcing wire means comprising a wire helically disposed along said hose, and an outer hose clamp structure connected to said hose and comprising a one-piece member having two opposed ends which when interconnected together define an annular band around said hose and are adapted to secure said hose onto a member telescoped in said hose by tightly engaging a substantially annular portion of said hose around said member, the improvement wherein said hose clamp structure has groove means therein that nestably receives part of said reinforcing wire means therein, and fastening means securing said part of said reinforcing wire means to said hose clamp structure whereby said fastening means connect said hose clamp structure to said hose, said fastening means comprising at least two fastening members respectively disposed adjacent said opposed ends of said hose clamp structure, said groove means extending at least from one of said fastening members to the other of said fastening members and said part of said reinforcing wire means being nestably received in said groove means from at least said one fastening member to said other fastening member.

4,483,557

DOOR CLOSURE MECHANISM HAVING ADJUSTABLE KEEPERS

John V. Pastva, Parma Heights, Ohio, assignor to The Eastern Company, Cleveland, Ohio

Filed Sep. 17, 1982, Ser. No. 419,227
Int. Cl.³ E05C 9/08
U.S. Cl. 292—218 **5 Claims**



1. An adjustable keeper for use with a door closure mechanism or the like of the type having a locking rod, a latch member fixed to the rod and a handle for rotating the rod, said adjustable keeper member comprising:

a base having a mounting face;

a support member extending from said base;

a latch engagement member movably secured to said support member and having a latch engagement surface inclined with respect to said mounting face and positioned to be engaged by a latch member at a location along the inclined surface; and

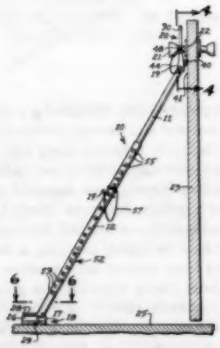
means for repositioning said latch engagement member at a location displaced from its secured position in a direction generally parallel to the base mounting face so a latch member will engage said latch engagement surface at a different location along the inclined surface in use.

4,483,558

DOOR SECURITY DEVICE

Verial V. Van Meter, Rt. #1 - Box 570-B, Burns, Tenn. 37029

Filed Nov. 23, 1981, Ser. No. 323,902
Int. Cl.³ E05C 17/12
U.S. Cl. 292—339 **11 Claims**



1. A security device for a door including a doorknob having a shaft portion, in which the door is adapted to close the entrance to a room havng a floor, comprising:

(a) an elongated rigid rod member having an upper end portion and a lower end portion,

(b) a foot member adapted to engage the floor of a room having a door to be secured,

(c) means supporting said foot member on said lower end portion,

(d) said upper end portion terminating in an abutment member,

(e) a head having a recess for receiving the shaft portion of a doorknob of the door to be secured, and

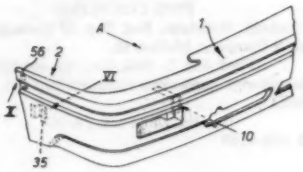
(f) means pivotally connecting said head to said upper end portion for pivotal movement about an axis spaced from said abutment member, so that when said rod member is in an operative position for securing the door, said foot member engages the floor, said recess receives the doorknob shaft portion, and said abutment member projects toward and engages a portion of the door beneath the shaft portion to absorb a substantial portion of the thrust of the door when forced toward said rod member.

4,483,559

BUMPER BAR FOR A MOTOR VEHICLE

Idris Lewis, Ramsden Heath; Roy H. Allen, Dunmow; John E. Roscoe, Leigh-On-Sea; John I. Churchill, Hockley, and Ronald A. Parkes, Billericay, all of England, assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 14, 1983, Ser. No. 474,991
Claims priority, application United Kingdom, Apr. 2, 1982, 8211491
Int. Cl.³ B60R 19/02
U.S. Cl. 293—126 **10 Claims**



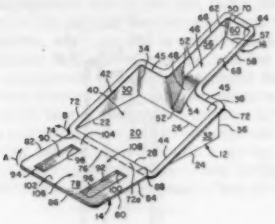
1. A bumper bar for a motor vehicle comprising a main body portion of moulded plastics material for extending transversely across the motor vehicle and having, along at least part of its length, two opposed walls connected into a box girder structure and end portions moulded integrally with the main body portion and projecting from each end thereof for extending along the sides of the motor vehicle, and means for releasably connecting the bumper bar to a motor vehicle body characterized in that the means for releasably connecting the bumper bar to the motor vehicle body comprises a first pair of transversely spaced connectors for securing the main body portion to the motor vehicle, a second pair of connectors each for securing respective end portions to the motor vehicle, and each comprising a bracket projecting from the wall of a respective end portion for spacing the end portion transversely from the vehicle, the bracket including a wall having an outer surface for abutment with the motor vehicle body and having an aperture therethrough and a cam surface adjacent the aperture on the inner surface of the wall, and a fastener for securing the bracket to the vehicle body comprising a bolt having a head at one end for engaging the inner surface of a body panel to which the end portion is to be attached, a shank for projecting through an aperture in the body panel and the aperture in the wall and the rest of the bracket, and projections extending radially from the end of the shank opposite the head for engagement with the cam surface, the cam surface being so shaped that rotation of the bolt in one direction moves the bracket axially toward the head, and a third pair of connectors each for securing a respective end portion to the motor vehicle body, and comprising a bracket adapted to be mounted at a desired vertical level on the vehicle body and a locating part fixed to the end portion and forming a snap engagement with the bracket.

4,483,560

DISPOSABLE WASTE SCOOP AND SCRAPER

Peter F. Lordi, Highland, N.Y., assignor to Ulster Manufacturing, Inc., Highland, N.Y.

Filed Mar. 14, 1983, Ser. No. 475,022
Int. Cl.³ A01K 29/00; A47L 13/52
U.S. Cl. 294—1 B 9 Claims



1. A combination disposable scoop and scraper device for collecting waste materials from a surface comprising:

a scoop including a shovel portion and a handle portion extending therefrom, said shovel portion having a generally planar bottom, a pair of opposite logitudinal sides extending upwardly from said bottom and a rear wall extending upwardly from said bottom and joining said sides, said bottom, sides and rear wall defining a generally open front cavity for receiving waste materials; and

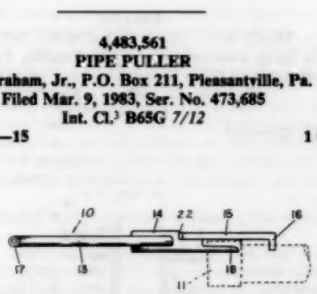
a generally planar scraper member detachably mounted via a tear line on said shovel portion, said scraper member comprising first and second opposite end edges and including rib means for dividing said scraper member into a first relatively rigid zone and a second relatively resilient and deformable zone, said rib means including at least two elongated ribs extending between and spaced from said end edges, a first end portion extending between said first end edge and the ends of said ribs adjacent thereto and a second end portion extending between said second end edge and the ends of said ribs adjacent thereto, said second end portion having a greater length between its end edge and said rib ends than said first end portion, said first zone, including said first end portion, adapted to be grasped when said scraper member is detached from said shovel portion and said second zone, including said second end portion, adapted to be placed into contact with said surface and to be deformed into close engagement therewith by force applied to said first zone, whereby waste on said surface may be forced into said cavity by said scraper member.

4,483,561

PIPE PULLER

Daniel M. Graham, Jr., P.O. Box 211, Pleasantville, Pa. 16341

Filed Mar. 9, 1983, Ser. No. 473,685
Int. Cl.³ B65G 7/12
U.S. Cl. 294—15 1 Claim



1. A pulling tool (10) for pulling pipe from a stack of pipes having a first end and a second end, and

comprising an elongated tubular handle (13) having a longitudinally extending slot extending from said first end toward said second end,

a first plate like frame member (14) having one end received in said longitudinally extending slot and welded to said tubular handle and terminating in an insert leg,

a second plate like frame member (15) having a first end and a second end,

said first end of said second plate like frame member being fixed to said first plate like frame member (14) and disposed generally perpendicular to said first mentioned plate like frame member (14),

said insert leg having a reduced size end (18) disposed in parallel spaced relation to said second mentioned plate like frame member (15),

said reduced size end (18) being adapted to be inserted into the open end of a pipe,

said second plate like frame member (15) being adapted to overlie a pipe when said reduced size end is inserted in said pipe,

a stop plate (16) on the second plate like frame member (15) and disposed generally perpendicularly to said first plate like frame member and to said second plate like frame member,

said stop plate having a contoured edge (20) spaced from said second plate like frame member (15) and adapted to engage a flange on the pipe whereby an operator can pull the pipe from a stack,

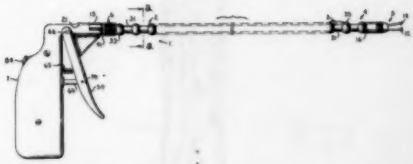
said handle (13) has a T-shaped hand engaging member (17) attached thereto remote from said plate like frame members (14 and 15).

4,483,562

LOCKING FLEXIBLE SHAFT DEVICE WITH LIVE DISTAL END ATTACHMENT

Arnold Schoolman, 8705 Catalina Dr., Prairie Village, Kans. 66207

Filed Oct. 16, 1981, Ser. No. 312,008
Int. Cl.³ B25J 1/02
U.S. Cl. 294—19 R 7 Claims



3. A locking flexible shaft device having a live attachment including:

(a) an elongate flexible shaft having a plurality of points of articulation, a proximal end, a distal end, passageway means, and comprising a plurality of interengaging members;

(i) said interengaging members being alternating spheroidal and cylindrical members;

(ii) said points of articulation being locations whereat said members interengage; and said points of articulation being universal joints permitting articulation of limited angle in any direction;

(b) tensioning means associated with said flexible shaft and extending through said passageway means and generally within said interengaging members;

(i) said tensioning means having locked and unlocked orientations associated therewith; said locked orientation producing frictional engagement between said interengaging members at said universal joints locking each universal joint in a preselected orientation thereby selectively locking said flexible shaft in an orientation selected from a plurality of orientations made possible by said plurality of universal joints; said unlocked orientation permitting free articulation about said universal joints;

(c) a tensioning means actuator associated with said tension-

ing means and being selectively manipulative to place said tensioning means in said locked and unlocked orientations thereof;

(i) said tensioning means actuator being located near said proximal end of said flexible shaft;

(ii) said tensioning means being a tensioning wire extending between near said distal end of said flexible shaft and near said tensioning means actuator;

(d) said live attachment being mounted near said distal end of said flexible shaft; and

(e) an attachment actuator located near said proximal end of said flexible shaft and remote from said live attachment and communicating with said live attachment;

(f) actuator means extending through said passageway means and, in combination with said attachment actuator, providing selective actuation of said attachment whereby an operator may selectively operate said live attachment by manipulation of said attachment actuator.

4,483,563

DEVICE FOR HANDLING AN OBJECT SUCH AS A PIPE OR PILE

Henricus J. T. M. van der Heyden, Warmond, Netherlands, assignor to Heerema Engineering Service B.V., Leiden, Netherlands

Filed Aug. 3, 1982, Ser. No. 404,834

Claims priority, application Netherlands, Aug. 5, 1981, 8103694

Int. Cl.³ B66C *1/00*; E21B *23/00*

U.S. Cl. 294—90 **1 Claim**

1. A device for handling an object such as a pipe or pile of the type which includes a pair of two diametrically opposite lugs projecting radially inwardly from the surface of the pipe or pile; said handling device comprising, a cylindrical member acting on said object, said cylindrical member having two sets of four elongate grooves or recesses formed in the outer surface thereof disposed adjacent one another in the peripheral direction, trapezoidal grooves or recesses formed in said outer surface at the top and bottom ends of said elongate grooves or recesses, said elongate grooves or recesses extending in the upward direction and the first and fourth of each set being open at the bottom and merging into one another via said trapezoidal grooves or recesses of which the shortest of the parallel sides thereof terminates into the preceding groove or recess and a radially extending rocker supported in the center and disposed interior of the cylindrical member, said rocker having ends projecting into the lowest portion of the trapezoidal groove or recess present between the second and third groove of said two diametrically opposed sets of grooves or recesses, said cylindrical member capable of being lowered into the pipe for handling and being cooperative with said radially inwardly extending lug.

4,483,564

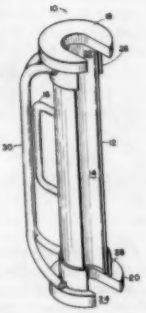
OIL WELL SUCKER ROD SAFETY BLOCK

David L. McDaniel, Cleveland, Okla., assignor to McDanco, Inc., Tulsa, Okla.

Filed Aug. 2, 1982, Ser. No. 404,364

Int. Cl.³ B66C *1/00*

U.S. Cl. 294—91 **3 Claims**



1. A safety block comprising:

(a) a longitudinally slotted pipe wherein said slot is adapted to fit over the polish rod of an oil well pump in an axial orientation;

(b) a slotted top plate perpendicularly attached to a longitudinally slotted pipe section wherein said slots are adapted to fit over said polish rod of said oil well pump in an axial orientation and wherein said longitudinally slotted pipe section of said top is further adapted to concentrically engage with said longitudinally slotted pipe;

(c) a slotted bottom plate perpendicularly attached to another longitudinally slotted pipe section wherein said slots are adapted to fit over said polish rod of said oil well pump in an axial orientation and wherein said longitudinally slotted pipe section of said bottom is further adapted to concentrically engage to the other end of said longitudinally slotted pipe; and

(d) a resilient attachment means connecting said top and bottom plates which are concentrically engaged to said longitudinal slotted pipe thus allowing said plates with slotted pipe sections to rotate axially relative to said longitudinally slotted pipe during no-load and to flex during compression thus interlocking said concentric pipe sections and pipe during use of said safety block.

4,483,565

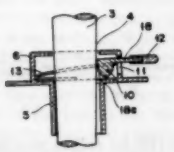
HEAD REST STAY RETAINING DEVICE

Mituru Terui, Yokohama, and Youki Yoshida, Yokosuka, both of, assignors to Ikeda Bussan Co., Ltd., Yokohama, Japan

Filed Jun. 22, 1981, Ser. No. 276,280

Int. Cl.³ A47C *7/38*

U.S. Cl. 297—410 **22 Claims**



1. A head rest stay retaining device, comprising:

a stay supporting the head rest in such a manner that the head rest can be vertically moved, said stay being pro-

vided with an engagement face formed continuously thereon to a predetermined length along the axis of the stay, said engagement face of the stay being tapered toward the axis of the stay, so as to be nearer to the axis of the stay as it extends in a downward direction;

a support cylinder provided within the back of a seat to guide the vertical movement of said stay; and

a pushing member having an engagement face for engaging with said engagement face of the stay, and a pivotal axis for pivoting of the pushing member about said axis, said pushing member, when pivoted in one direction, causing said engagement face of said pushing member to be in contact or engagement with said engagement face of the stay, and when pivoted in the opposite direction, causing said engagement face of said pushing member to be disengaged from said engagement face of said stay, said pushing member being further provided with a spring so as to always force said engagement face of said pushing member in the direction of said engagement face of said stay.

4,483,566

OSCILLATED HEAD WITH BEARING SUPPORT AND COUNTERBALANCE, FOR FLOOR STRIPPING MACHINE

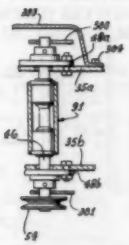
Palmer Grasse, 1407 Lee Dr., Glendale, Calif. 91201, assignor to Palmer Grasse, Glendale, Calif., Trustee of Grasse Family Trust

Continuation-in-part of Ser. No. 443,327, Nov. 22, 1982, Pat. No. 4,452,492, which is a continuation-in-part of Ser. No. 329,523, Dec. 10, 1981, Pat. No. 4,365,843, which is a continuation-in-part of Ser. No. 318,827, Nov. 6, 1981, Pat. No. 4,365,842. This application Mar. 9, 1983, Ser. No. 473,695

The portion of the term of this patent subsequent to Dec. 28, 1999, has been disclaimed.

Int. Cl.³ A47L *11/12, 13/02*

U.S. Cl. 299—37 **10 Claims**



1. For use in power-operated floor stripping apparatus that includes a frame, a drive carried on the frame, wheels supporting the frame, a handle to guide the frame, and a cutting blade carried by a head which is pivotally mounted to the frame, the improvement comprising

(a) a connecting element having a first tubular part and a second tubular part, said parts having spaced parallel axes, said second tubular part pivotally connected to the head,

(b) a drive shaft extending within said first tubular part, said shaft operatively connectible to the drive to be rotated thereby,

(c) said drive shaft carrying eccentric means to be rotated by the shaft,

(d) bearing means carried by and within said first tubular part, said bearing means receiving said eccentric means to oscillate said first tubular part, said head and said blade as said eccentric means is rotated by the shaft,

(e) and counterbalance means located on said drive shaft to rotate therewith and reduce vibration created by said oscillations,

(f) said eccentric means including two axially spaced eccentrics, therebeing a lubricant receiving space located directly between said eccentrics, and said counterbalance means includes two axially spaced weights carried on said shaft at locations between which said two eccentrics extend, said eccentrics having opposites facing end faces which flare radially outwardly and axially away from said space, to urge and guide lubricant toward said bearings.

4,483,567

APPARATUS FOR POSITIONING SUPPLY CONNECTIONS INTO ASSOCIATION WITH A MINING EXTRACTOR

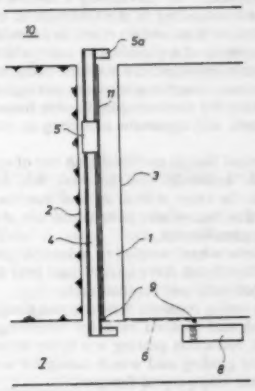
Karl H. Schwarting, Voerde, Fed. Rep. of Germany, assignor to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Fed. Rep. of Germany

Filed May 14, 1982, Ser. No. 378,209

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1981, 3123473

Int. Cl.³ E21C *27/34*

U.S. Cl. 299—43 **5 Claims**



1. An apparatus for positioning supply lines for a minining extractor machine which is movable against and along a working face of a longwall of a mine, and guided on a longwall conveyor having a fixed support part extending along the longwall, comprising:

a cable conduit connected to the fixed support part and having an upper supply line space extending along the length of the longwall, and a lower return space extending along the length of the longwall;

an endless supply line chain conveyor having an upper run extending along said upper supply line space and a lower run extending along said lower return space, said endless supply line chain conveyor connected to the mining extractor machine for moving as a function of the movement of the mining extractor machine; and

a plurality of flat supply line bearing strips connected at spaced locations along said endless supply line chain conveyor for supporting the supply lines during their movement in said upper supply line space;

said cable conduit including a slot defined in said upper supply line space and a slot defined in said lower return space, each slot extending along the length of the longwall for accommodating said supply line bearing strips.

4,483,568

ADVANCING APPARATUS FOR A MULTI-UNIT MINING MACHINE

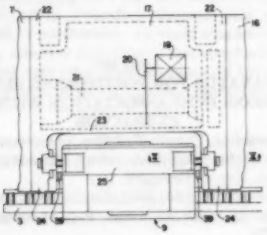
Herbert Schupphaus, Bochum, and Heinz Pulger, Dortmund, both of Fed. Rep. of Germany, assignors to Gebr. Eickhoff Maschinefabrik und Eisengiesserei m.b.H., Bochum, Fed. Rep. of Germany

Filed Sep. 13, 1982, Ser. No. 416,929

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1981, 3137553

Int. Cl.³ E21C *29/22*

U.S. Cl. 299—53 **7 Claims**



1. An apparatus for advancing a mining machine along a toothed rack extending in the direction of movement by the mining machine in an under ground mine, said mining machine being comprised of a plurality of units which includes a hydraulic unit independent of a machine body, said hydraulic unit being narrower than the other units and including a pump and reservoir therefor connected by flexible hoses to a plurality of drive motors, said apparatus including in combination therewith:

two vertical flanges each being on one of opposite side walls of said hydraulic unit adjacent said toothed rack but within the cross section of said machine body and connected to two of said units which are at opposite sides of said hydraulic unit,

a gear drive wheel coupled to reduction gearing driven by a plurality of said drive motors, said gear drive wheel being engaged with said toothed rack,

a winch casing received between said flanges and extending around said toothed rack for receiving said gear drive wheel, reduction gearing and drive motors thereof, and

means for guiding said winch casing for vertical movement between said vertical flanges.

4,483,569

SEALED BALL AND SOCKET JOINTS CAPABLE OF DISASSEMBLY

Joseph E. Smith, Birmingham, Mich., assignor to Gulf & Western Manufacturing Company, Southfield, Mich.

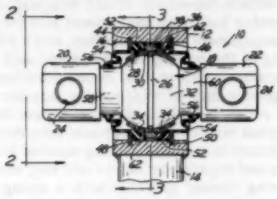
Continuation-in-part of Ser. No. 286,470, Jul. 24, 1981, Pat. No. 4,386,869. This application Dec. 18, 1981, Ser. No. 332,110

The portion of the term of this patent subsequent to Jun. 7, 2000, has been disclaimed.

Int. Cl.³ F16C *32/00*

U.S. Cl. 308—2 R **6 Claims**

1. In a sealed bearing comprising an inner member having a peripheral surface of regular predetermined contour, a tubular housing, a bearing ring disposed in said housing and having a bearing surface in sliding engagement with the peripheral surface of said inner member, said bearing ring having a peripheral surface generally conforming to the inner surface of said housing and fitting in said housing, a pair of resiliently deformable rings each made of elastomeric material and each disposed on one side of said bearing ring, means in said housing holding said deformable rings under compression such as to firmly engage said deformable rings with a portion of said bearing ring towards the peripheral surface of said inner member, an elastomeric bellows seal having a flange at an end held by one of said means in said housing for holding one of said deformable rings under compression, said bellows seal having a garter flange at its other end in firm elastic engagement with a portion of the peripheral surface of said inner member, and sealing means at the other end of said housing sealing the



interior of said housing and said bearing surfaces from the ambient, the improvement comprising a groove in the inner surface of said housing and one of said holding means being in the form of a springingly expandable removable retaining ring disposed in said groove.

4,483,570

MAGNETIC BEARING ARRANGEMENT FOR AN ARTIFICIAL SATELLITE

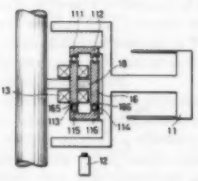
Masao Inoue, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 25, 1983, Ser. No. 469,659

Claims priority, application Japan, Feb. 26, 1982, 57-30417

Int. Cl.³ F16C *39/06*

U.S. Cl. 308—10 **3 Claims**



1. A magnetic bearing arrangement for controlling the attitude of an artifical satellite having an axis of rotation comprising:

a stator having at least three segments, each of said segments being provided with a permanent magnet and an electromagnet for axial control;

a rotor disposed for rotation about said axis of rotation and spaced radially outwardly of said stator; and

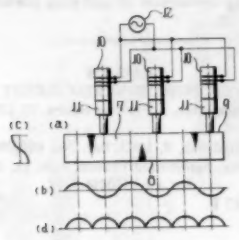
sensor means carried by said stator for detecting any axial displacement of said rotor and controlling actuation of said electromagnet to thereby rectify said axial displacement and simultaneously any inclination of said rotor relative to the axis of rotation of said rotor;

said rotor being bifurcated along its inner circumference with said stator being interposed between the axially bifurcated portions of said rotor and with the mutually facing portions of said rotor and said stator being formed with mutually facing recesses having portions on opposite sides thereof which define there-between two gaps which are radially spaced from each other relative to said axis of rotation which serves for the radial position control of said rotor when any radial displacement thereof has occurred.

4,483,571
ULTRASONIC PROCESSING DEVICE

Shoji Mishiro, Kawasaki, Japan, assignor to Tage Electric Co., Ltd., Tokyo, Japan

Filed May 5, 1983, Ser. No. 491,803
Claims priority, application Japan, May 12, 1982, 57-79774
Int. Cl.³ H01L 41/08
U.S. Cl. 310—323 8 Claims

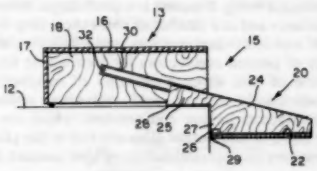


1. An ultrasonic processing device, comprising:
an ultrasonic vibrator which resonantly vibrates in an axial direction thereof; and
an unslotted wide horn which resonantly vibrates in a $\frac{1}{4}$ wave length in a longitudinal direction and in a $\frac{1}{4} \times n$ wave length (where n is an integer) in a widthwise direction thereof;
said ultrasonic vibrator being joined to a point of said wide horn at which amplitude of vibrations is maximum in the distribution thereof along the widthwise direction.

4,483,572
CONSOLE FOR VIDEO DISPLAY UNIT AND DETACHED KEYBOARD

Joe B. Story, Norcross, Ga., assignor to Myrid Concepts Corporation, Atlanta, Ga.

Filed Feb. 28, 1983, Ser. No. 470,260
Int. Cl.³ A47B 21/03
U.S. Cl. 312—196 7 Claims

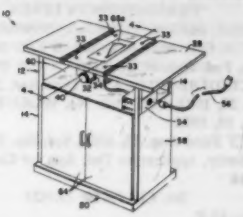


1. A console for a video display and detached keyboard adapted for use upon a supporting surface elevated substantially above normal typing height, and with said console comprising a rigid base that includes a generally flat top from opposite ends of which two sides depend adapted to be set upon the supporting surface with a video display unit supported upon said top; a movable platform upon which a keyboard may be supported and electrically coupled with the video display unit; and support means movably supporting said platform upon said two base sides beneath said top for movement between a keyboard operative position with said platform projecting generally parallel with and out from under said base member top at a height substantially below the bottom of said sides and a keyboard stored position with said platform located beneath said base member top between said two base sides; and with said support means including a first elongated member pivotably mounted at a pivot to one of said base sides for movement between a position generally parallel with said base member top in said keyboard stored position and a position sloping downward from said pivot in said keyboard operative position.

4,483,573
TOOL ADAPTER FOR WORKING TABLE TOP STORAGE CABINET

David L. Keller, 313 Kelly Dr., Decherd, Tenn. 37324

Filed Jul. 9, 1982, Ser. No. 396,811
Int. Cl.³ A47B 81/00
U.S. Cl. 312—281 5 Claims

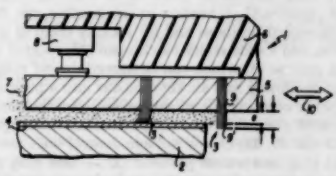


1. A kit having as components thereof an adapter for use in anchoring a power tool on a working surface, said adapter comprising a substantially U-shaped member bounded on each side by the upright portion of an L, said upright portion of said L having a base portion of said L extending horizontally from the bottom thereof, upper and lower clamps of a shape similar to said adapter but without said extending base portion of said L, said clamps being adapted to hinge together and hold said power tool in place with said adapter.

4,483,574
SLIDING ELECTRICAL CONTACTS FOR ELECTRIC MACHINERY

Jean P. Chabrerie, Gif-sur Yvette; Jacques C. Barthélemy, Cachan, and Michel L. Amiet, Paris, all of France, assignors to Etat Francais, France

Filed Oct. 31, 1980, Ser. No. 202,874
Claims priority, application France, Nov. 8, 1979, 79 27526
Int. Cl.³ H01R 39/00
U.S. Cl. 339—5 L 5 Claims



1. An electric contact device for maintaining sliding electrical contact between two members moving relative to one another comprising:
a first member;
a second member having an electrically conductive portion spaced from said first member by a substantially constant average spacing and coupled such that said first and second member are movable relative to one another while maintaining said substantially constant average spacing, said second member being configured in the form of a transversely grooved rotating ring;
at least one multifilament brush formed as a bundle of thin electrically conducting wires having a first end received in said first member and a free end extending from said first member and into contact with said electrically conductive portion of the second member, said free end hav-

ing a length extending between said first and second members which is 10%–20% greater than said average spacing, said brush having an elasticity such that the free end of said brush is maintained in contact with said electrically conductive portion solely due to that elasticity; and

a liquid maintained between said first and second members in which said at least one brush is emersed.

4,483,575

DEVICE FOR DETACHABLE CONNECTION, PARTICULARLY OF THE ENDS OF HIGH-VOLTAGE TRANSMISSION LINES

Manfred Krüger, and Franz E. Schulte Strathaus, both of Unna, Fed. Rep. of Germany, assignors to F.E. Schulte Strathaus KG, Unna, Fed. Rep. of Germany

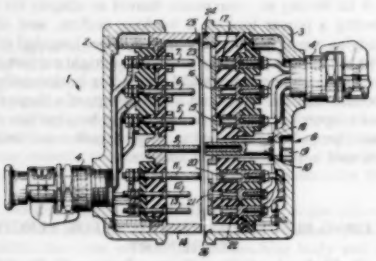
PCT No. PCT/DE81/00129, § 371 Date Apr. 27, 1982, § 102(e) Date Apr. 27, 1982, PCT Pub. No. WO82/00925, PCT Pub. Date Mar. 18, 1982

PCT Filed Aug. 25, 1981, Ser. No. 375,281

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1980, 3032414

Int. Cl.³ H01R *13/621*

U.S. Cl. 339—14 P **5 Claims**



1. Device with a plug portion (2) and a socket portion (3) for the detachable connection of said plug portion and socket portion, such as for the ends of high-voltage transmission lines, said plug portion (2) having plug pins (5, 6, 7) therein arranged in spaced relation, said socket portion (3) having socket contacts (15, 16, 17) for receiving said plug pins and means (8) in said plug and socket portions for moving said plug and socket portions (2, 3) relative to one another into the coupled and uncoupled positions and for locking them in the coupled position, and a slide safety mechanism (23) located within said socket portion (3) which can be moved during coupling from a position closing said socket contacts into a position opening the socket contacts for receiving said pins, wherein the improvement comprises that complementary interengaging ends (12, 13 and 21, 22) of low voltage control lines are integrated in said plug and socket portions (2, 3), said plug portion (2) including a grounding pin (11) and said ends in said plug portion comprising a pair of control pins, said socket contacts in said socket portion (3) comprises first contact sleeves (15–17) corresponding in number to said plug pins and arranged to receive said plug pins therein, a second contact sleeve (20) for receiving said grounding pin (11) therein, and two third contact sleeves (21, 22) for receiving said control pins (12, 13) therein, said means (8) comprises a threaded bolt (9) in one of said plug portion (2) and socket portion (3) and a corresponding threaded sleeve (10) in the other one of said plug portion (2) and socket portion (3) so that by moving said threaded bolt into said threaded sleeve, said plug pins, grounding pin and control pins are moved in said first contact sleeves, second contact sleeve and third contact sleeves respectively, for effecting the connection of said device and the geometrical dimensions of the intergaged said plug, grounding and control pins and the corresponding said first, second and third contact sleeves being selected so that initially said grounding pin enters said second contact sleeve, followed by said plug pins entering said first contact sleeves and then by said control pins entering said third contact sleeves, a first control surface (25) in said plug portion (2), a second control surface (24) on said slide safety mechanism aligned with said first control surface so that said slide safety mechanism (23) is moved into the position opening said socket contacts by the contact of said first control surface (25) with said second control surface (24) for facilitating the coupling connection of said plug portion (2) and said socket portion (3).

4,483,576

CONNECTOR FOR PRINTED-CIRCUIT BOARDS

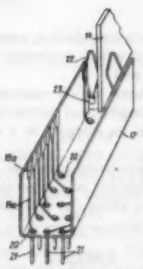
Francois R. Bonhomme, 6 Parc de Béarn, 92 210 Saint Cloud, France

Filed Feb. 9, 1983, Ser. No. 465,099

Claims priority, application France, Feb. 12, 1982, 82 02293

Int. Cl.³ H01R *9/11*

U.S. Cl. 339—17 F **13 Claims**



1. A connector for printed-circuit board, which board has tracks spaced apart at a given pitch, said connector comprising a case, said connector further comprising, in the case, at least one row of deformable individual contacts, disposed at the pitch of said tracks of a corresponding side of the printed-circuit board, a plurality of rows of individual output elements, there being one output element per individual contact, said output elements being disposed at a pitch larger than the pitch of said contacts and in a number of rows exceeding the number of rows of said individual contacts, and a printed sheet having a plurality of printed conductors for forming, at least on one end portion of said sheet, a plurality of conductive tracks which individually contact said individual contacts, said printed conductors having end portions which are disposed along the rows of said output elements and at the pitch of said output elements so as to establish an electric contact therewith.

4,483,577

ELECTRICAL BRIDGING CONNECTOR AND METHOD OF USE

Joseph R. Novis, 3798 Kensington Dr., Marietta, Ga. 30066

Filed Jan. 7, 1982, Ser. No. 337,578

Int. Cl.³ H01R *13/44, 43/00*

U.S. Cl. 339—38 **15 Claims**

1. A method of electrically connecting a first cable to contact points on electronic equipment to which a second cable is connected by means of a first jack, which comprises the steps of:

(a) connecting the first cable to a second jack having wire-wrap posts,

(b) mounting a conducting bridging connector on the wire-wrap posts of the second jack,

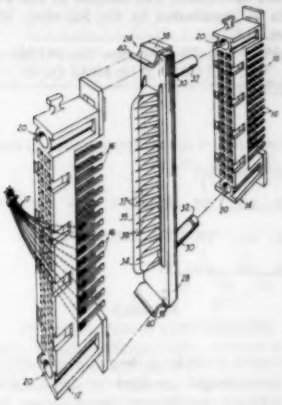
(c) removing the first jack from the electronic equipment,

(d) connecting the second jack to the electronic equipment, and

(e) connecting the first jack to the bridging connector.

9. A bridging connector electrically connecting a plurality of pairs of wire-wrap posts in a first jack in a double row to a like number of pin contactors in a second jack, comprising:

(a) a nonconductive body having a first major surface and a second opposite major surface, a blade extending from the first major surface for separation of each of the pairs of posts located on the first jack and a plurality of teeth



extending from the first major surface for separation of adjacent posts in the rows of the first jack,

(b) a plurality of contacts mounted on the first major surface for contact with the posts, and

(c) a plurality of pins electrically connected to the contacts and disposed in the body and extending from the second major surface to be engaged by the contactors in the second jack.

4,483,578

CONNECTOR WITH LOCKING MECHANISM

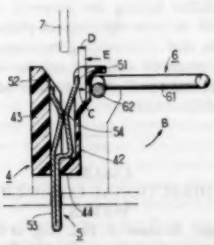
Tazawa Masahiro, Tokyo, Japan, assignor to Showa Musen Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 22, 1982, Ser. No. 421,129

Claims priority, application Japan, Jan. 19, 1982, 57-4579[U]

Int. Cl.³ H01R *13/62*

U.S. Cl. 339—75 MP **2 Claims**



1. A connector with a locking mechanism comprising:

a housing including a pair of opposing side walls one of which is resilient and a pair of opposing end walls provided at the ends of said side walls to define an inlet for a flexible printed circuit board which is to be received between said opposing side walls;

a plurality of contact springs disposed within said housing in spaced relationship in a longitudinal direction of the housing, said contact springs being bent to provide first and second opposing legs with said first legs being always in contact with the non-resileint side wall of said housing and with said second legs being spaced from said resilient side wall of said housing in the unlocked position of said connector and being adapted to be abutted by the resilient side wall of the housing in the locked position of said connector; and

a locking lever formed by bending a length of wire and being rotatably mounted on said end walls of the housing adjacent to said resilient side wall, said lever having a substantially U-shaped configuration, the opposing legs of said U-shaped lever comprising a pair of opposing operation legs and an arm connected at its opposite ends to one end of said operation legs at right angles to the legs and including a center eccentric portion adapted to abut against said resilient side wall which in turn biases said contact springs in the locking position of said connector.

4,483,579

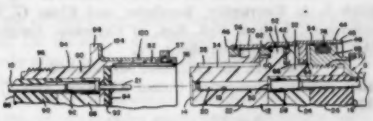
ELECTRICAL CONNECTOR HAVING IMPROVED COUPLING RING

Paul B. Derr, Middletown; Clarence L. Paullus, Lewisberry, and Howard R. Shaffer, Millersburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 480,040, Mar. 29, 1983, abandoned, which is a continuation of Ser. No. 243,224, Mar. 12, 1981, abandoned. This application Jan. 12, 1984, Ser. No. 569,938

Int. Cl.³ H01R *13/625*

U.S. Cl. 339—90 R **5 Claims**



1. An electrical connector, comprising:

a dielectric housing member having a mating surface and a wire entry surface, passageway means extending through the housing member, electrical terminal means secured in said passageway means for matable electrical connection with electrical contact means in a complementary electrical connector;

a metal shell member extending along said housing member from a position adjacent said mating surface to another position adjacent said wire entry surface, said metal shell member engaging a part of said housing member and being rotatable relative to said housing member;

coupling means as part of said metal shell member for coupling engagement with complementary coupling means on the complementary electrical connector to couple the electrical connector and complementary electrical connector together enabling the electrical terminal means to be electrically connected to the electrical contact means;

means on said metal shell member on one side of said part of said housing member and said coupling means on another side of said part mounting said metal shell member on said housing member for rotation relative to said housing member; and

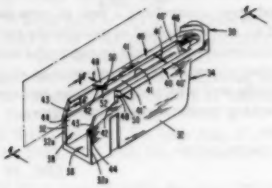
a metallic cylindrical mounting section mounted on said housing member surrounding said wire entry surface, said metal shell member and said cylindrical mounting section have overlapping portions whereby said metal shell member and said cylindrical mounting section define shield means for said connector.

4,483,580

ELECTRICAL CONNECTORS WITH PROTECTIVE HOOD

Walter J. Pelczarski, Downers Grove, Ill., assignor to Allied Corporation, Southfield, Mich.

Filed Sep. 17, 1982, Ser. No. 419,387
Int. Cl.³ H01R *13/56*
U.S. Cl. 339—103 M **11 Claims**



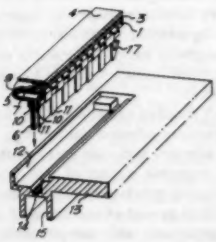
11. In an electrical connector having a protective hood releasably mounted thereon the combination of: locking means carried by said hood and said connector for locking said hood to said connector when said hood is fully assembled thereon by relative longitudinal movement therebetween, and means defining a ramp carried by said hood and operative against said connector responsive to the application of transverse pressure therebetween from an external force on said hood perpendicular to the plane of movement of said hood for laterally disenabling said locking means such that said hood may be slidably removed from said connector.

4,483,581

ELECTRICAL EDGE CONNECTOR

Friedrich J. A. Kourimsky, Bensheim, and Klaus G. Seidel, Roedermark, both of Fed. Rep. of Germany, assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 26, 1982, Ser. No. 401,666
Claims priority, application United Kingdom, Aug. 7, 1981, 8124136
Int. Cl.³ H01R *13/50*
U.S. Cl. 339—176 MP **2 Claims**



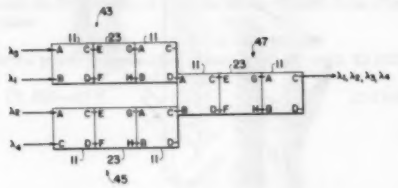
1. An electrical edge connector comprising an elongate housing formed with a slot for receiving the edge of a circuit substrate, the housing being formed at a side opposite the slot with a membrane-like extension formed with a U-fashion section adjacent to the slot, the membrane-like extension having a free edge portion which extends laterally from the U-fashion section away from the slot, the U-fashion section and the free edge portion extending parallel to the slot, contacts mounted in the housing having resilient contact portions disposed at intervals along the slot for engaging circuit paths at the edge of the substrate, the contacts having contact tails extending from the housing tranversely of the slot, the contact tails extending in U-fashion around and against the U-fashion section of the membrane-like extension, the contact tails having end portions which extend across the free edge portion of the membrane-like extension, the end portions of the contacts being arranged in a row extending generally parallel to the slot.

4,483,582

WAVELENGTH MULTIPLEXER-DEMULTIPLEXER

Sang K. Sheem, Springfield, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 23, 1980, Ser. No. 142,951
Int. Cl.³ G02B *5/14*; H04J *15/00*
U.S. Cl. 350—96.15 **17 Claims**



7. A wavelength multiplexer-demultiplexer comprising:

three two-wavelength multiplexer-demultiplexers, each two-wavelength multiplexer-demultiplexer including a pair of four-port power dividers and a four-port phase shifter, two of the ports of one power divider and two of the ports of the other power divider being respectively connected to the four-ports of the phase shifter,

one of the ports of one power divider of one of the two-wavelength multiplexer-demultiplexers and one of the ports of one power divider of another two-wavelength multiplexer-demultiplexer being connected to respective ports of one power divider of a third two-wavelength multiplexer-demultiplexer,

each power divider having the property of providing two equal power outputs differing in phase by 90° and conversely, of coupling all the power to one of two isolated ports when power is applied equally to two other ports with a 90° phase differential, and of coupling all the power to the other of the two isolated ports when power is applied equally to the two other ports with a −90° phase differential; and

each phase shifter having the property of providing two equal power outputs differing in phase by 90° for one wavelength, and of providing two equal power outputs differing in phase by −90° for another wavelength, when power is applied equally to two other ports thereof with a 90° phase differential.

4,483,583

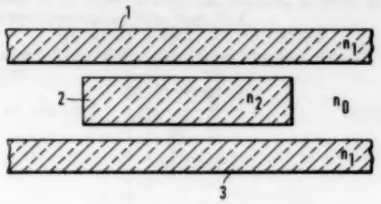
SELECTIVE DIRECTIONAL COUPLER FOR GUIDED WAVES

Hans-Georg Unger, Brunswick, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 8, 1982, Ser. No. 355,843
Claims priority, application Fed. Rep. of Germany, Mar. 7, 1981, 3108742; Mar. 7, 1981, 8106546[U]
Int. Cl.³ G02B *5/174*
U.S. Cl. 350—96.15 **20 Claims**

1. In a selective directional coupler composed of two outer waveguides, the improvement comprising means for coupling said waveguides together composed of an intermediate waveguide disposed between said two outer waveguides, said intermediate guide being constructed to have a cross section which is unvarying along its length and positioned such that at a

selected coupling frequency only one mode of said intermediate waveguide, constituting a coupling mode, is in phase syn-



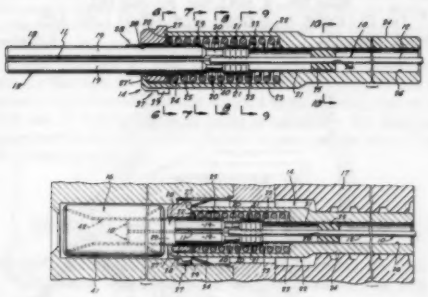
chronism with the transmission modes in said two outer waveguides.

4,483,584

OPTICAL FIBER CONNECTOR

John B. Gresty, Westlake Village, Calif., assignor to Automation Industries, Inc., Greenwich, Conn.

Filed Sep. 28, 1981, Ser. No. 306,330
Int. Cl.³ G02B 7/26
U.S. Cl. 350—96.21 **5 Claims**



1. A connector for a pair of optical glass fibers including a glass core, a glass cladding over said core, and a protective covering thereover, said pair of glass fibers each having an end portion extent of the protective covering removed and the glass core end faced off to 90 degrees, comprising:

a contact for each of the glass fibers including, three elongated members each having an elongated uniform diameter cylindrical portion and an end portion with radially outwardly extending securing means thereon, said members being so dimensioned as to enable forming an assembly about the glass fiber of the three members with the cylindrical portions simultaneously contacting each other and the bare glass core periphery along the full length of the bare glass core lying opposite the cylindrical portions and the securing means contacting the fiber protective covering, means for holding the three elongated members with their cylindrical portions arranged in mutual contacting relation and extending outwardly of the said holding means; and

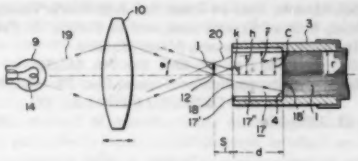
an alignment means for receiving the three elongated member assemblies from the pair of contacts and locating the outer ends of the two assemblies in end contacting relation.

4,483,585

ILLUMINATING DEVICE HAVING OPTICAL LIGHT GUIDE FORMED AS FIBRE BUNDLE

Akiyoshi Takami, Saitama, Japan, assignor to Olympus Optical Co., Ltd., Japan

Filed Nov. 24, 1982, Ser. No. 444,471
Claims priority, application Japan, Dec. 18, 1981, 56-203637
Int. Cl.³ G02B 5/17
U.S. Cl. 350—96.24 **32 Claims**



1. An illuminating device utilizing an optical light guide in the form of a fibre bundle, said illuminating device comprising a light source, an optical light guide in the form of a fibre bundle, an optical reflecting body having a peripheral reflecting portion and attached to the incidence end surface of the fibre bundle, and a light source lens guiding illuminating light from the light source to the fibre bundle; said lens and said optical reflecting body having such a structure that when the bright spot image of the light source formed by the lens has a peaked light intensity distribution, the following condition is satisfied:

$$(-S+d/n)\tan\alpha \geqq \tfrac{1}{2}r$$

in which:

S is the air equivalent length between the bright spot image and the incidence end surface of the optical reflecting body which is plus from the end surface to the fibre bundle,

d is the length of the optical reflecting body,

n is the refractive index of the optical reflecting body,

α is the angle of marginal ray relative to optical axis, and

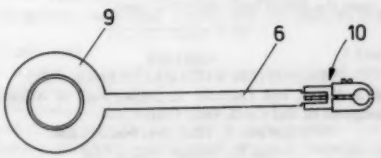
r is the effective radius of the fibre bundle.

4,483,586

SAFETY SPACER

Konstantin Sisto, Tampere, Finland, assignor to Kommandiittiyhtiö B. Herrmans Kommanditbolag, Pedersöre, Finland

Filed Nov. 30, 1982, Ser. No. 445,570
Claims priority, application Finland, Dec. 8, 1981, 813932
Int. Cl.³ G42B 5/12; B64Q 1/32; B62J 5/24
U.S. Cl. 350—97 **5 Claims**



1. A bicycle reflector comprising:

an arm;

a reflector at one end of the arm;

a pivot shaft, which is substantially plane parallel with the reflector, at the opposite end of the arm;

a split member comprising two parts adapted to receive the end of the arm opposite said reflector, at least one part having an aperture or depression for receiving the pivot

shaft, and wherein said parts when assembled comprise an annular groove; and

a splittable fastening means comprising two fastening lugs forming therebetween a cavity, said cavity comprising a radially inwardly projecting annular ridge for rotatably engaging with the annular groove of the split member.

4,483,587

SIGHTING AND AIMING ARRANGEMENT FOR USE DURING DAY OR NIGHT

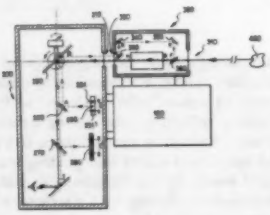
Patrick Michon, Jouy en Josas, and Jean-Marie Vauchy, Saint-Cloud, both of France, assignors to Societe de Fabrication d'Instruments de Mesure, Massy, France

Filed Dec. 20, 1982, Ser. No. 451,559

Claims priority, application France, Dec. 22, 1981, 81 23972

Int. Cl.³ G02B *27/14*; H01J *31/50*

U.S. Cl. 350—174 **10 Claims**



1. A sighting and aiming arrangement, of the type comprising:

an optical sighting device comprising an entry window and comprising a source of visible light forming a reticle,

an afocal opto-electronic unit for night vision, comprising an entry window and an eyepiece window and connected to the sighting device so that it can be separated,

a common structure supporting the optical sighting device and the opto-electronic unit, characterized in that:

the eyepiece window of the opto-electronic unit is located in front of the entry window of the optical sighting device, the entry window of the opto-electronic unit being orientated in the direction of the object sighted,

and in that reflecting and quiding means are provided in order to guide light rays emitted by the reticle to leave the optical sighting device by passing through the entry window of the optical sighting device then by-pass the opto-electronic unit toward the entry window of the opto-electronic unit, the path of the rays leaving the optical sighting device being parallel to the path of the rays entering the opto-electronic unit, in order to cause said rays emitted by the reticle to enter the entry window of the afocal opto-electronic unit together with the rays emitted by the object sighted,

whereby both rays will follow the same further optical path into the afocal opto-electronic unit.

4,483,588

MAGNIFIER WITH REFERENCE LINE

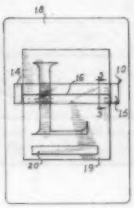
Emil J. Dalbo, and Lorraine E. Dalbo, both of Atlanta, Ga., assignors to Dal-Craft, Inc., Tucker, Ga.

Filed Jul. 2, 1982, Ser. No. 394,634

Int. Cl.³ G02B *7/02*, *27/02*

U.S. Cl. 350—247 **3 Claims**

1. A magnifier, for use in needlework wherein instructions are mounted on a ferromagnetic board, said magnifier including a magnifying lens disposable across said instructions, magnet means carried by said magnifying lens for holding said magnifier to said ferromagnetic board, said magnifying lens having a flat bottom surface that engages said instructions, said magnifier including a reference line defined substantially at said bottom surface, said magnifying lens being semicylindrical in shape, said reference line being located slightly off center of said flat bottom surface for providing a work reference when



viewing said instructions through the apex of said semicylindrical shape.

4,483,589

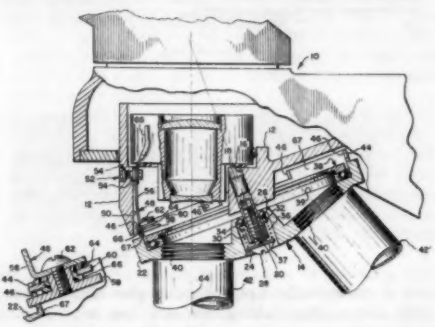
INDEXING MECHANISM FOR ROTATABLE NOSEPIECE OF A MICROSCOPE

Henry J. Emmel, Rochester, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Dec. 9, 1982, Ser. No. 448,142

Int. Cl.³ G02B *7/16*; G05G *5/06*; H01H *1/06*, *1/26*

U.S. Cl. 350—254 **8 Claims**



1. Apparatus for indexing a rotatable member relative to a support of an optical instrument to align one of a plurality of objectives mounted to said rotatable member with the optical axis of said optical instrument, said apparatus comprising:

(a) a support;

(b) first means, rotatably mounted to said support, having a flange with a plurality of detents spaced around the perimeter thereof;

(c) resilient means mounted to said support adjacent said first means;

(d) second means, rotatably mounted to said resilient means for rotational engagement with said flange between said detents of said first means; and

(e) locating means non-rotatably mounted to said resilient means for engagement with said detents, whereby as said first rotatable means is rotated said second means rolls along said flange until one of said detents is encountered at which time said resilient means forces said non-rotatable locating means into engagement with said one of said detents.

4,483,590
ADJUSTABLE SLIT ASSEMBLY FOR A MONOCHROMATOR

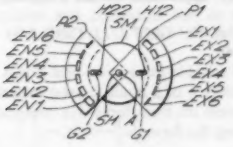
Anthony R. L. Moss, Cambridge, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 5, 1982, Ser. No. 439,463

Claims priority, application United Kingdom, Nov. 23, 1981, 8135219

Int. Cl.³ G01J 3/04

U.S. Cl. 350—273 **12 Claims**



1. An adjustable slit assembly for a monochromator, including slit defining means defining first and second variable width slit means disposed along a common circle, and support means supporting said slit defining means, said slit defining means and support means being rotatable together about an axis at the centre of the circle to bring a pair of selected width portions, one portion from each slit means, to the radiation entrance and exit positions of the monochromator, characterised in that said slit defining means is formed by two separate substantially identical slit plates, each slit plate having said variable width slit means disposed along an arc of said circle, the arc being of substantially minimum length determined by the number of slit portions in the slit means and the minimum length of each slit portion required to pass a radiant beam of predetermined energy through the monochromator, and the shape of each slit plate being substantially a sector of a further circle, the radius and arc of said sector both being substantially the minimum necessary to accommodate the slit means and the axis of said first-mentioned circle.

4,483,591
ELECTRO-OPTICAL DISPLAY ELEMENT AND METHOD FOR ITS MANUFACTURE

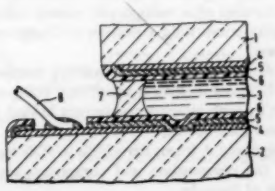
Holm Baeger, Schwalbach, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 13, 1982, Ser. No. 416,994

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1981, 3138373

Int. Cl.³ G02F 1/13

U.S. Cl. 350—320 **20 Claims**



1. In a method of manufacturing electro-optical display elements, particularly liquid-crystal displays, in which an electrically conductive layer is applied to a glass substrate and an insulating layer is then applied on top of said electrically conductive layer, said insulating layer being first subjected to a drying process and then to a firing process and being removed in regions of contacting points for said conductive layer, the improvement comprising,

after said drying process, applying a substance which decomposes under the action of heat to said insulating layer in said regions of said contacting points,

said substance having at least one decomposition component which penetrates into said insulating layer,

subsequently performing said firing process.

16. In a method of manufacturing electro-optical display elements, particularly liquid-crystal displays, in which an electrically conductive layer is applied to a glass substrate and an insulating layer is then applied on top of said electrically conductive layer, said insulating layer being first subjected to a drying process and then to a firing process and being removed in regions adjacent to contacting points for said conductive layer, the improvement comprising,

after said drying process, filling pores of said insulating layer, at said regions of the contacting points, with an electrically conductive substance under pressure.

17. In a method of manufacturing electro-optical display elements, particularly liquid-crystal displays, in which an electrically conductive layer is applied to a glass substrate and an insulating layer is then applied on top of said electrically conductive layer, said insulating layer being first subjected to a drying process and then to a firing process and being removed in regions adjacent to contacting points for said conductive layer, the improvement comprising

after said drying process, filling pores of said insulating layer, at said regions of the contacting points, with an electrically conductive substance by means of application of vacuum.

18. In an electro-optical display element, particularly a liquid-crystal display, comprising two glass substrates arranged spaced apart from each other and having facing surfaces, respectively, facing each other, an electrically conductive layer on said facing surfaces of each of said substrates, respectively, an insulating layer on each of said conductive layers, respectively, a liquid having crystals alignable in an electric field and disposed between said insulating layers, and electric connecting elements being electrically connected to contacting points of at least one of said conductive layers, the improvement wherein

said insulating layer on said at least one of said conductive layers has pores in regions adjacent each of the contacting points of said conductive layers,

an electrically conductive substance fills the pores of said insulating layer in the regions adjacent each said contacting points, and

said electrically conductive substance is in contact through said pores with said contacting points and with said connecting elements, respectively.

4,483,592
LIQUID CRYSTAL OPTICAL VALVE CONTROLLED BY PHOTOCONDUCTING EFFECT

Philippe Aubourg; Jean P. Huignard, and Michel Hareng, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Apr. 9, 1982, Ser. No. 367,014

Claims priority, application France, Apr. 10, 1981, 81 07206

Int. Cl.³ G02F 1/13

U.S. Cl. 350—342 **2 Claims**

1. A method for producing an image in a liquid crystal device, said device comprising:

two electrodes forming a capacitor;

a liquid crystal layer between said two electrodes;

a photoconductive material plate disposed between said electrodes to one side of said liquid crystal layer;

and a transparent support medium on the outside of the electrode which is nearest said liquid crystal layer;

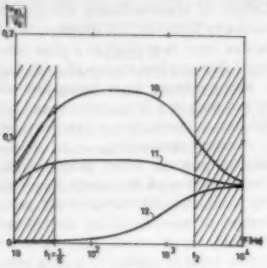
and said method for producing an image comprising:

receiving optical control radiation by said plate;

modulating another source of optical radiation by said layer;

determining a first frequency equal to the inverse of the space charge time constant of said photoconductive material;

determining a second frequency equal to the frequency at which the voltage transmission ratio as a function of frequency presents a point of inflexion;



connecting said electrodes to an AC voltage generator having a frequency that is between a lower limit equal to said first frequency and an upper limit equal to said second frequency.

4,483,593

GUEST-HOST TYPE LIQUID CRYSTAL COMPOSITION AND LIQUID CRYSTAL DISPLAY DEVICE

Shuji Imazeki, Hitachi; Akio Mukoh, Mito; Mikio Sato, Hitachi; Seiichi Imahori, Kawasaki; Masaharu Kaneko, Yamato, and Tetsuo Ozawa, Tokyo, all of Japan, assignors to Hitachi, Ltd. and Mitsubishi Chemical Industries Limited, both of Tokyo, Japan

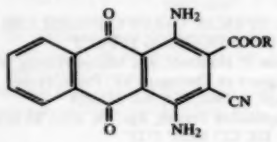
Filed Mar. 18, 1982, Ser. No. 359,513

Claims priority, application Japan, Mar. 20, 1981, 56-39336

Int. Cl.³ C09K *3/34*; G02F *1/13*; C09B *1/22*

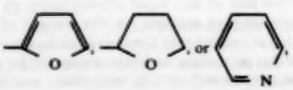
U.S. Cl. 350—349 **15 Claims**

1. A guest-host type liquid crystal composition containing a pleochroic dye dissolved as a guest in a host liquid crystal, which comprises the pleochroic dye being at least one of dyes of anthraquinone series, represented by the following general formula (1);



(1)

wherein R is an alkyl group having 1 to 18 carbon atoms or a cyclohexyl group, which alkyl group can be substituted by hydroxyl group, alkoxy group, cyclohexyl group, phenyl group, phenyloxy group, dialkylamino group,



and which cyclohexyl group can be substituted at the para-position by an alkyl group, an alkoxy group or a cyclohexyl group.

4,483,594

LIQUID CRYSTAL MATERIALS CONTAINING PLEOCHROIC ANTHRAQUINONE DYES

Kenneth J. Harrison, Malvern Link; Edward P. Raynes, Malvern; Frances C. Saunders, Malvern Wells, and David J. Thompson, Whitefield, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

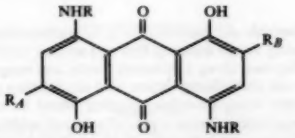
Division of Ser. No. 287,123, Jul. 27, 1981, Pat. No. 4,391,489. This application Apr. 13, 1983, Ser. No. 484,603

Claims priority, application United Kingdom, Jul. 29, 1980, 8024761

Int. Cl.³ G02F *1/13*; C09K *3/34*

U.S. Cl. 350—349 **10 Claims**

1. A material suitable for a guest-host liquid crystal device comprising a solution of a liquid crystal material and a pleochroic dye wherein the pleochroic dye comprises at least one compound having the formula:



wherein each of R_A and R_B is independently a group $—CH_2Q^1$ wherein Q_1 is an alkyl group having from 1 to 10 carbon atoms inclusive, and wherein each of the R groups is independently hydrogen or an alkyl group having from 1 to 4 carbon atoms inclusive.

4,483,595

LIQUID CRYSTAL COMPOSITIONS

Deborah A. L. Irving; Damien G. McDonnell, and Edward P. Raynes, all of Malvern, England, assignors to The Secretary of State for Defence in Her Brittanic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Mar. 4, 1982, Ser. No. 354,640

Claims priority, application United Kingdom, Mar. 13, 1981, 8108038

Int. Cl.³ G02F *1/13*; C09K *3/34*

U.S. Cl. 350—350 R **17 Claims**

1. A nematic liquid crystal compostion suitable for use as the liquid crystal material of a multiplexed twisted nematic electro-optical display comprising a mixture of Components A, B and C as follows:

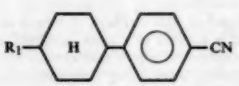
Component A: a high dielectric anisotropy component;

Component B: a low dielectric anisotropy component;

Cpmponent C: a high clearing component having a clearing point greater than 80° C.;

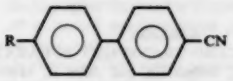
wherein Component A forms from 20% to 60% inclusive by weight of the composition and comprises one or more compounds of formula:

(Formula I)



where R_1 is an n-alkyl group having from 2 to 4 carbon atoms; together with one or more compounds of formula:

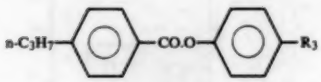
(Formula III)



where R is an n-alkyl group having from 2 to 4 carbon atoms; provided that 4-cyano-4'-ethylbiphenyl is present in Component A;

wherein Component B forms from 20% to 50% by weight of the composition and comprises one or more esters of formula:

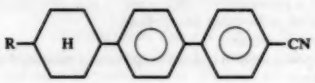
(Formula II)



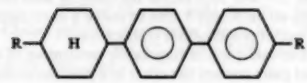
where R_3 is selected from n—C_3H_{11} and n—C_7H_{15};

and wherein Component C forms from 15% to 35% inclusive by weight of the composition and consists of compounds having a clearing point greater than 80° C. and at least 50% by weight of Component C is formed by one or more compounds selected from the families of compounds whose formulae are represented by Formulae IV to VII as follows:

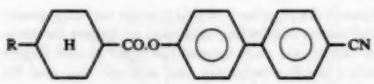
(Formula IV)



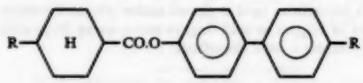
(Formula V)



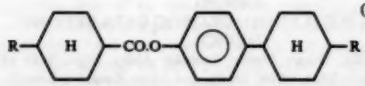
(Formula VI)



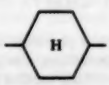
(Formula VII)



(Formula VIII)



where each R is independently n-alkyl having up to seven carbon atoms, and



represents a trans-1,4-disubstituted cyclohexane ring;

the percentages by weight of Components A, B and C adding to 100%.

4,483,596

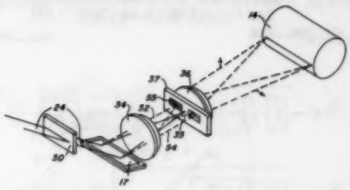
INTERFACE SUPPRESSION APPARATUS AND METHOD FOR A LINEAR MODULATOR

Sidney W. Marshall, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 1, 1982, Ser. No. 353,726

Int. Cl.³ G02B *27/26, 27/28*

U.S. Cl. 350—385 **10 Claims**



1. In combination,

an electro-optic modulator for modulating a sheet-like, collimated light beam in accordance with pixel bits representative of an image original to selectively produce a zero order beam and at least one pair of side order beams in response to said pixel bits;

beam stop means interposed in the path of said zero order beam to prevent passage thereof;

optical means for imaging said pair of side order beams onto a recording medium;

said modulator including means for selectively altering on a pixel bit by pixel bit basis the phase of the transmitted light; and

means to prevent destructive interference between said pair of side order beams.

4,483,597

LARGE APERTURE RATIO TELEPHOTO LENS SYSTEM

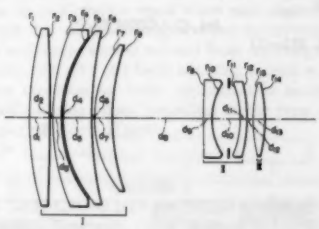
Shinichi Mihara, Hachiooji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 26, 1982, Ser. No. 401,950

Claims priority, application Japan, Aug. 14, 1981, 56-126810

Int. Cl.³ G02B *13/02*

U.S. Cl. 350—454 **7 Claims**



1. A larger aperture ratio telephoto lens system consisting of a first lens group having four lenses and having positive refractive power as a whole, a second lens group having two negative lenses and having negative refractive power as a whole, and a third lens unit having a single lens, said large aperture ratio telephoto lens system being so adapted as to satisfy the conditions (1) through (3) shown below:

(1) $0.4f < f_I < 0.8f$

(2) $0.2f < |f_{II}| < 0.5f$

(3) $0.3f < f_{III} < 0.8f$

wherein reference symbol f represents the focal length of the lens system as a whole, and reference symbols f_I, f_{II} and f_{III}

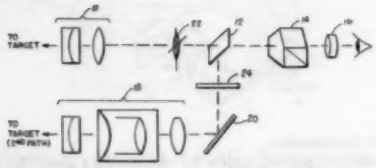
respectively represent focal lengths of the first and second lens groups and the third lens unit.

4,483,598

GUN SIGHT

Robert A. Leightner, Burlington, and Henry Thibault, Colchester, both of Vt., assignors to General Electric Company, Burlington, Vt.

Filed Jul. 6, 1982, Ser. No. 395,216
Int. Cl.³ G02B *23/04*; G01C *1/00*
U.S. Cl. 350—558 **7 Claims**



1. An optical sight for providing a lead angle for a moving target comprising:

a first telescope having a fixed increasing first magnification for providing a first relatively large image of the target;

a second telescope having means for providing a selectable increasing second magnification for providing a second image, which is smaller than said first image, of said target, said second magnification being a function of a characteristic of the relationship of said target to said sight;

an eyepiece;

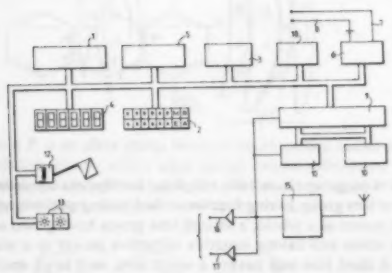
means for simultaneously combining and overlaying said first and said second images and for providing such combined and overlayed image to said eyepiece.

4,483,599

SIMULTANEOUS VISUAL AND AUDIO SIGNAL APPARATUS

Sandy MacRae, Maidenhead, and Les Young, London, both of England, assignors to Crystal Audio Visual Products, Ltd., England

Filed May 13, 1983, Ser. No. 494,309
Claims priority, application United Kingdom, Oct. 6, 1982, 8228486
Int. Cl.³ G03B *31/00*
U.S. Cl. 352—22 **11 Claims**



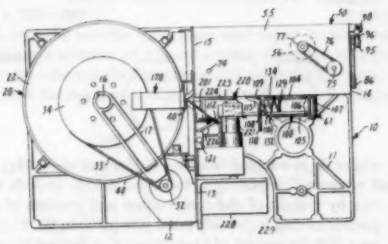
1. Apparatus for providing simultaneous visual and audio signals, the apparatus comprising means for entering and storing a selected sequence of alpha/numeric characters, means for visually displaying an entered and stored sequence of alpha/-numeric characters, speech synthesizer means for audibly sounding the entered and stored sequence of alpha/ numeric characters, and means for simultaneously providing visual and audible start marks for synchronisation.

4,483,600

MICROFICHE CARD TRANSPORT APPARATUS

John E. Burbank, III, Ridgefield, and John R. Montgomery, Fairfield, both of Conn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 11, 1983, Ser. No. 474,537
Int. Cl.³ G03B *23/08*
U.S. Cl. 353—118 **6 Claims**



1. In a microfilm storage and retrieval system for use with microfiche cards containing a plurality of images on a single rectangular card, the cards being mounted in spaced relation in a storage tray, and means to engage an edge of a microfiche card disposed in a card storage tray wherein a plurality of cards are stored in a generally parallel position in a plurality of adjacent slots, the improvement comprising:

means defining a first frame,

pairs of fingers positioned in spaced relation and mounted on said first frame,

supporting means for said first frame for moving said first frame in a plane on an X and Y axis to move a microfiche card into and out of position in a storage tray,

means connected to said pairs of fingers for movement of at least one of said pairs toward the other in a predetermined plane parallel with the plane of a card disposed in a tray, and

means adjacent the periphery of said storage tray engageable with said means connecting said pairs of fingers for moving said one of said pairs toward the other as said fingers approach a position adjacent said storage tray and for allowing said pairs of fingers to separate upon movement away from said position adjacent said tray whereby an edge of a microfiche card is placed under tension between said pairs of fingers as said fingers move away from said tray and extract a card therefrom.

4,483,601

CAMERA WITH PHOTOGRAPHIC DATA SETTING DEVICE

Minoru Sekida, Sakai; Toshio Yamaki; Akira Fujii, both of Osaka; Shuzo Matsushita, Ikeda, and Akira Kataoka, Sennan, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 2, 1983, Ser. No. 463,116
Claims priority, application Japan, Feb. 5, 1982, 57-17869; Feb. 26, 1982, 57-30936
Int. Cl.³ G03B *17/02, 17/18*
U.S. Cl. 354—288 **32 Claims**

1. A camera in which a plurality of photographic data are input by manual key operations, comprising:

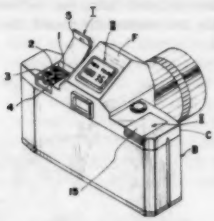
a photographic data-setting section provided at a position of said camera for setting said photographic data;

manually operable input keys provided at said photographic data-setting section;

setting data-indicating means arranged adjacent to said input

keys and manually operable for movement between a first position for indication of a first predetermined group of said photographic data and a second position for indication of a second predetermined group of said photographic data; and

input data changing-over means responsive to the movement of said setting data-indicating means between said first and



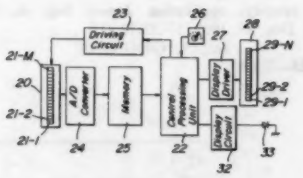
second positions for changing-over the photographic data to be input by the manual operations of said input keys so that only the first group photographic data can be input with said setting data-indicating means being at said first position and so that only the second group photographic data can be input with said setting data-indicating means being at said second position.

4,483,602

APPARATUS FOR DETECTING A FOCUSING CONDITION OF AN OBJECTIVE LENS

Masahiro Aoki, Fussa; Kenichi Oinoue, Tokyo; Masatoshi Ida, and Asao Hayashi, both of Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Japan

Filed Mar. 29, 1982, Ser. No. 362,993
Claims priority, application Japan, Mar. 28, 1981, 56-46086
Int. Cl.³ G03B *7/08, 17/20*
U.S. Cl. 354—402 **19 Claims**



1. In an apparatus for detecting a focusing condition of an objective lens of an optical device comprising a focusing screen arranged at a position optically conjugated with a predetermined focal plane, a viewfinder for inspecting an image of an object formed on said focusing screen, a photodetector array having a number of photodetectors arranged closely side by side on or near a plane which is optically conjugated with the predetermined focal plane, means for projecting a part of the object image upon said photodetector array, and means for receiving image signals supplied from said photodetectors and for processing the image signals in accordance with a given evaluation function to detect the focusing condition of the objective lens, the improvement comprising:

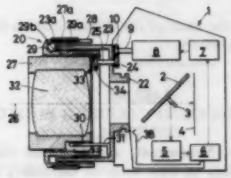
means for selecting an active region portion of said photodetector array for use in detecting the focusing condition, to enable the active region portion to be selectively changed in size and position within the photodetector array to change the size and position of that part of the object image which is used to control focusing.

4,483,603

AUTOMATIC FOCUSING ARRANGEMENT FOR CHANGING THE FOCUS DRIVING DIRECTION IN ACCORDANCE WITH THE TYPE OF INTERCHANGEABLE OPTICAL UNIT

Tsuneyo Metabi; Yukio Maekawa, and Makoto Ando, all of Sakai, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 8, 1982, Ser. No. 439,873
Claims priority, application Japan, Nov. 11, 1981, 56-181431
Int. Cl.³ G03B *3/10*
U.S. Cl. 354—402 **16 Claims**



1. An automatic focusing arrangement for an optical instrument having a main body and an interchangeable optical unit capable of being removably mounted on said main body, wherein said main body includes a focusing signal generating means for generating a focusing signal representing a focusing direction, and a focusing driving section operating in response to said focusing signal in a forward or reverse direction depending on the focusing direction represented by said focusing signal, and wherein said interchangeable optical unit includes a driven section driven by said focusing driving section with said optical unit mounted on said main body and a focus adjusting section driven by said driven section to move for focus adjustment, a relation signal representing the relationship between the driving directions of said driven section and said focus adjusting section being normal or reversed in accordance with the type of said interchangeable optical unit,

said arrangement comprising:

a signal means provided in said optical unit for generating said relation signal; and

operation direction changing means provided in said main body for changing the operating direction of said focusing driving section represented by said focusing signal in response to said relation signal when said relation signal represents that the relationship between the driving directions of said driven section and said focus adjusting section is opposite, whereby said focus adjusting section moves in a proper direction for focus adjustment in accordance with said focusing signal regardless of the type of said interchangeable optical unit.

4,483,604

FOCUS DETECTING DEVICE WITH SHIELDING

Akira Hiramatsu, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

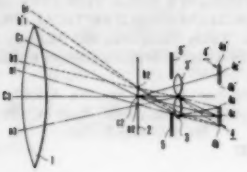
Filed May 13, 1983, Ser. No. 494,770
Claims priority, application Japan, May 21, 1982, 57-84847
Int. Cl.³ G03B *3/10*
U.S. Cl. 354—402 **6 Claims**

1. A focus detecting device for detecting a focusing state of an objective comprising:

(a) optical means for forming a plurality of images in a relative positional relationship which changes depending on a focusing condition of an objective on the basis of a light passing through the objective;

(b) discriminating means to discriminate whether a fully opened F-number of the objective is larger or smaller than a predetermined value; and

(c) shading means for changing an aperture in a stepwise manner corresponding to each image formed by the optical means on the basis of the discrimination results of the discriminating means.



4,483,605

CIRCUIT FOR A COMPUTERIZED PHOTOFLASH CONTROL

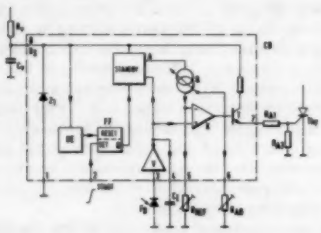
Gerhard Krumrein, Neuenstadt, and Hartmut Hantsch, Bad Friedrichshall, both of Fed. Rep. of Germany, assignors to Telefunken Electronic GmbH, Heilbronn, Fed. Rep. of Germany

Filed Jun. 22, 1983, Ser. No. 506,818

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1982, 322557

Int. Cl.³ G03B *15/05*

U.S. Cl. 354—417 **16 Claims**



1. A circuit for a computerized photoflash control which is supplied with a current of a certain magnitude, from which an electrical quantity terminating the flash is derived, wherein the circuit contains a comparator (K), with a voltage derived from the current supplied at one of its inputs (+), while the other input (−) of the comparator (K) is supplied with an adjustable reference voltage, and wherein a switching path (T, Thy) actuated by the switch-over operation of the comparator is connected to the output of the comparator.

4,483,606

TONER SCATTERING PREVENTION DEVICE

Takashi Kuwako, Okazaki, and Takao Fujiwara, Toyokawa, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 7, 1983, Ser. No. 458,870

Claims priority, application Japan, Jan. 22, 1982, 57-7996[U]

Int. Cl.³ G03G *15/08*

U.S. Cl. 355—3 DD **6 Claims**

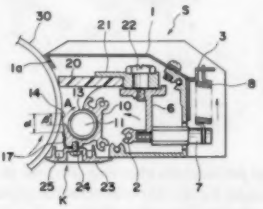
1. A device for preventing toner from scattering out of a developing device or a cleaning device, with said developing device and said cleaning device being provided so as to confront a surface of a toner image support member arranged to be driven for rotation, said device comprising:

a toner sealing plate of elastic material, which is brought into light pressing contact with the surface of said toner image support member;

a support member for supporting, on a support face thereof, said toner sealing plate integrally with said developing device or with said cleaning device, with said toner sealing plate extending in a widthwise direction of said toner image support member;

a clamp member for clamping said toner sealing plate, which is formed with a clamp face confronting said support face of said support member, with a clearance between said support face and said clamp face being kept larger than a thickness of said toner sealing plate;

said support face and said clamp face defining therebetween a groove for accommodating said toner sealing plate therein; and



a clamp means for clamping said toner sealing plate in said groove, which prevents first displacement of said toner sealing plate in said groove and in a direction at right angles to the widthwise direction of said toner image support member but allows second displacement of said toner sealing plate in said groove, with the second displacement of said toner sealing plate resulting from expansion or shrinkage of said toner sealing plate in the widthwise direction of said toner image support member due to change in an environment surrounding said device.

4,483,607

RECORDING SYSTEM

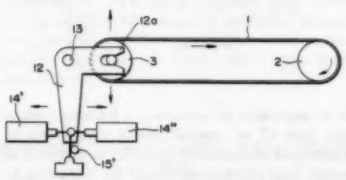
Haruhiko Nagayama, Machida, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Sep. 6, 1983, Ser. No. 529,541

Claims priority, application Japan, Sep. 6, 1982, 57-134227[U]; Dec. 29, 1982, 57-202125[U]

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 TR **4 Claims**



1. A recording system comprising:

a recording member in the form of an endless belt;

at least two rollers including a displacing roller supported for pivotal movement at one end thereof and displaceable in a vertical direction at the other end thereof, said at least two rollers having said recording member in the form of an endless belt trained thereover;

a correction device for correcting irregularities in the movement of said recording member in the form of an endless belt, said correction device being operative to move the other end of said displacing roller in displacing movement in a vertical direction when a deviation of the recording member from its normal path of travel exceeds a predeter-

mined level, to return the recording member to its normal path of travel; and

a corona discharger located in the vicinity of said displacing roller for effecting the transfer to a printing sheet of a toner image formed on a surface of said recording member; wherein the improvement comprises:

a guide member located adjacent said corona discharger and having two end portions, one end portion corresponding to said one end of said displacing roller and supported for pivotal movement and the other end portion corresponding to the other end of said displacing roller capable of moving in displacing movement in a vertical direction;

a shield formed integral with said guide member and arranged above a side portion of said corona discharger over which a transfer-printing sheet is fed to a clearance between said corona discharger and the surface of said recording member in the form of an endless belt, said shield cooperating with said guide member to provide guide means; and

coupling means coupling said displacing roller to said guide member so that the other end portion of said guide member can be moved in displacing movement in a vertical direction conjointly with the vertical displacing movement of the other end of said displacing roller caused to take place by said correction device, whereby said shield cooperating with said guide member to constitute guide means can be displaced upwardly through said coupling means when said displacing roller is at least displaced upwardly.

4,483,608

VARIABLE MAGNIFICATION COPYING APPARATUS

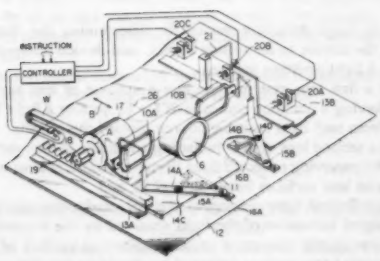
Shiroh Satoh, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Dec. 9, 1982, Ser. No. 448,181

Claims priority, application Japan, Dec. 10, 1981, 56-199074

Int. Cl.³ G03B *27/34, 27/40, 27/70*; G03G *15/28*

U.S. Cl. 355—8 **14 Claims**



1. In a variable magnification copying apparatus for obtaining a copy changed in size from an original pattern,

the improvement comprising in combination:

an optical system having an optical axis;

a movable carrier on which said optical system is mounted so as to be movable with said carrier, said carrier being reciprocable relative to a fixed member of the copying apparatus in the direction of said optical axis between at least first and second positions; and

a D.C. motor mounted on said carrier for driving said carrier in a self-propelled manner relative to said fixed member in the direction of said optical axis between at least said first and second positions to thereby move said optical system between at least corresponding first and second positions to enable respective different sizes of the original pattern to be made at said corresponding first and second positions of said optical system.

4,483,609

ILLUMINATION DEVICE FOR A COPYING MACHINE

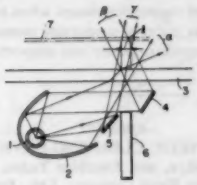
Masaaki Harada, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Feb. 9, 1982, Ser. No. 347,388

Claims priority, application Japan, Mar. 30, 1981, 56-45578

Int. Cl.³ G03G *15/00*; G03B *27/54*

U.S. Cl. 355—11 **5 Claims**



1. An illumination device for a copying machine comprising:

an image formation optical system;

a light source and a main reflector disposed about said light source and producing an arc of illumination directed toward a platen of said copying machine at a first angle relative to a plane perpendicular to said platen at a line image formation line on said platen;

a primary reflector disposed within the periphery of said arc of illumination and reflecting a first parallel beam of light toward said platen at a second angle, opposite in sign to said first angle, relative to said plane perpendicular to said platen;

a floating-original reflector disposed within said periphery of said arc of illumination, outside said main reflector, and reflecting a second parallel beam of light toward said platen at a third angle, significantly smaller than said first and second angles, relative to said plane perpendicular to said platen, said floating-original reflector being disposed between said image formation optical system and said main reflector at a position such that said second beam of light is directed to a position of an original floating within a predetermined range of distance from said platen.

4,483,610

METHOD OF CLEANING A TRANSFER MATERIAL SUPPORTING MEMBER IN AN IMAGE FORMING APPARATUS

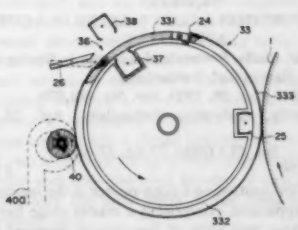
Yusaku Takada, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 31, 1983, Ser. No. 528,115

Claims priority, application Japan, Sep. 7, 1982, 57-155664

Int. Cl.³ G03G *21/00*

U.S. Cl. 355—15 **7 Claims**



1. A method of cleaning a transfer material supporting means in an image forming apparatus, which apparatus performs the steps of forming a toner image on an image bearing

member; supplying a transfer material onto an endless moving transfer material supporting means to transfer the toner image on said image bearing member to said transfer material; transferring the toner image on said image bearing member to said transfer material supported on said transfer material supporting means under the action of corona discharger means located opposite said supporting means; and separating and removing the transfer material from said transfer material supporting means after the transfer step; said method comprising cleaning said transfer material supporting means when no transfer material is on said transfer material supporting means and when said corona discharger means opposite said supporting means is not in operation.

4,483,611

MAGNETIC CLEANING DEVICE

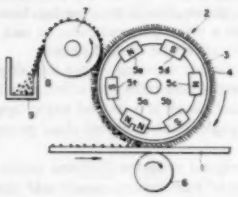
Yozo Matsuura, Tokyo, and Kazuhiro Yuasa, Zama, both of Japan, assignors to Ricoh Company, Ltd., Japan

Filed Jan. 20, 1983, Ser. No. 459,347

Claims priority, application Japan, Jan. 20, 1982, 57-6990; Apr. 10, 1982, 57-58980

Int. Cl.³ G03G *21/00*

U.S. Cl. 355—15 **24 Claims**



23. A magnetic cleaning device for cleaning magnetic toner particles from the imaging surface which is repetitively presented for use, comprising:

a sleeve supported to be driven to rotate in a predetermined direction, said sleeve having fur brush fixedly provided on its outer peripheral surface such as to be partly in brushing contact with said imaging surface, said fur brush being comprised of a material which is charged due to friction with said imaging surface and magnetic toner particles to the polarity opposite to that of said magnetic toner particles;

magnetic field producing means disposed inside of said sleeve for producing a magnetic field at least around said sleeve so as to cause said magnetic toner particles attracted toward said sleeve; and

removing means for removing said magnetic toner particles from said sleeve.

4,483,612

DEVICE TO POSITION A COPY MASTER IN A COPYING APPARATUS

Erich G. Binder, Buchs, Switzerland, assignor to Gretag Aktiengesellschaft, Regensdorf, Switzerland

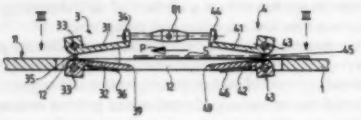
Filed Mar. 29, 1983, Ser. No. 480,079

Claims priority, application Switzerland, Apr. 23, 1982, 2501/82

Int. Cl.³ G03B *27/62, 27/64*

U.S. Cl. 355—76 **8 Claims**

1. A device for positioning a copy master in the master plane of a copying apparatus, comprising a master stage having an exposure window, two pairs of flap clamps disposed spaced apart in the direction of transport of a master, each pair having an upper and a lower flap, with the upper flaps being located above the master plane and the lower flaps under said master plane, said flaps being pivotable around axes extending essentially perpendicular to the transport direction of the copy master and symmetrically relative to said master plane to open



and close in the manner of a beak, and means for actuating said flaps.

4,483,613

RANGE DETECTING DEVICE

Hideo Yokota, Tokyo, Japan, assignor to Canon Kabushiki Kaisha

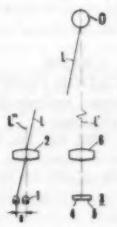
Continuation of Ser. No. 101,648, Dec. 10, 1979, Pat. No. 4,330,202. This application Nov. 20, 1981, Ser. No. 323,359

Claims priority, application Japan, Dec. 11, 1978, 53-153370

The portion of the term of this patent subsequent to May 18, 1999, has been disclaimed.

Int. Cl.³ G01C *3/10*; G03B *7/08*

U.S. Cl. 356—1 **2 Claims**



1. A range detecting device for determining the distance from the device to an outside object, said device comprising:

(a) a light emitting source;

(b) a first lens system including a number of lens surfaces having a common optical axis for projecting a light beam from said light emitting source toward the object;

(c) a second lens system including a number of lens surfaces for receiving reflected light from the object, at least one of said lens surfaces being aspherical; and

(d) reflected light sensing means for producing an output signal indicative of the light received by the second lens system; the curvature of said aspherical surface of said second lens system decreasing relative to the distance of said aspherical surface from the optical axis for correcting spherical aberration, said aspherical surface satisfying the following conditions:

$$x = R\left\{1 - \left(1 - \frac{y^2}{R^2}\right)^{\frac{1}{2}}\right\} + By^4 + Cy^6$$

wherein x represents the direction along the optical axis, y represents the direction perpendicular to the x direction, and R represents curvature around the optical axis, and

$$\frac{0.45}{f} < |B| < \frac{0.75}{f}, \quad \frac{1.2}{f} < |C| < \frac{2.6}{f}$$

wherein the second lens system includes at least a lens having

an aspherical surface and f is the focal length of the lens having the aspherical surface.

4,483,614

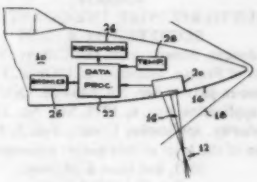
OPTICAL AIR DATA MEASUREMENT SYSTEM

Philip L. Rogers, Granada Hills, Calif., assignor to Lockheed Corporation, Burbank, Calif.

Continuation-in-part of Ser. No. 328,721, Dec. 8, 1981,. This application Mar. 22, 1982, Ser. No. 360,500

Int. Cl.³ G01P *3/36*; G01J *3/30*; G01N *21/00*

U.S. Cl. 356—28.5 **17 Claims**



1. An air data system for measuring air speed data and air data parameters, such as density, pressure, and/or barometric altitude, at a remote air sample location comprising:

a source of radiation,

first means for transmitting said radiation to said sample location,

second means for receiving backscattered radiation scattered in the direction of said source of radiation resulting from the illumination of particulate matter at said sample location by said transmitted radiation,

third means for measuring variations in the intensity of said received backscattered radiation,

fourth means for converting the intensity variations so measured into said air speed data,

fifth means for inducing at least one molecular species within the air at said sample location to emit fluorescence,

sixth means for measuring the intensity of said fluorescence, and

seventh means responsive to the measured fluorescent intensity for computing said air data parameter.

4,483,615

METHOD AND APPARATUS FOR DETECTING CHECKS IN GLASS TUBES

Robert J. Bieringer, Toledo, Ohio; Robert D. Kohler, Temperance, Mich., and James A. Ringlien, Maumee, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 18, 1981, Ser. No. 332,027

Int. Cl.³ G01N *21/88*

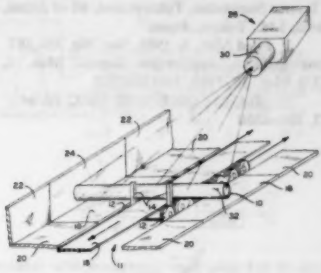
U.S. Cl. 356—237 **11 Claims**

5. An apparatus for inspecting a glass tube for optical checks comprising:

means engaging the tube for simultaneously rotating the tube about its longitudinal axis and moving the tube through an inspection area in a direction generally perpendicular to its longitudinal axis,

a source of diffuse light in the inspection area for illuminating a portion of the tube; and

camera means for viewing the illuminated portion of the tube in the inspection area and to measure the amount of light reflected therefrom; including a linear diode array having a predetermined inspection field height positioned at an angle of approximately 20° above the path of travel of the tube whereby the effective inspection field width in the inspection zone is sufficient to include at least the



entire region traversed by the tube during one revolution of the tube.

4,483,616

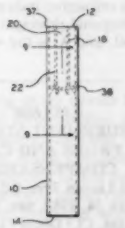
CONTAINER FOR SMALL QUANTITIES OF LIQUIDS

Max D. Liston, Irvine, and Paul K. Hsei, Huntington Beach, both of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

Continuation-in-part of Ser. No. 284,980, Jul. 20, 1981, abandoned. This application Jul. 20, 1982, Ser. No. 400,192

Int. Cl.³ G01N *1/10*

U.S. Cl. 356—246 **4 Claims**



1. A micro-container adapted for use in an automated clinical analyzer, said clinical analyzer having a sample holder for acceptance of a blood collection tube and equipped with a device for sensing the meniscus level of a fluid sample in said micro-container, said micro-container comprising:

an elongated cylindrical housing having an open end, the overall dimensions of such housing being essentially the same as the collection tube;

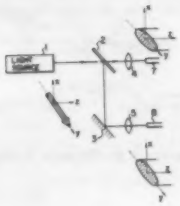
a fluid receptacle disposed within and, integral with said housing through a common interface, said receptacle having an essentially elongated cylindrical sidewall, an open top-end and a closed bottom-end, the open top-end of said receptacle being substantially smaller in cross-sectional area than the open top-end of said housing and at essentially the same level as the open top-end of said housing; and

said interface supporting the fluid receptacle within said housing, said interface consisting essentially of support means positioned below a design level of the meniscus of the fluid sample to be stored in such receptacle.

4,483,617
OPTICAL GYROSCOPE WITH LARGE PROPAGATION CONSTANT DIFFERENCE

Hiroyoshi Matsumura, Saitama; Toshio Katsuyama, Hachioji, and Tsuneo Suganuma, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 3, 1982, Ser. No. 354,187
Claims priority, application Japan, Mar. 4, 1981, 56-29029[U]; Mar. 30, 1981, 56-43788[U]
Int. Cl.³ G01B 9/02; G01C 19/64
U.S. Cl. 356—350 **4 Claims**



1. An optical gyroscope comprising a coil of an optical fiber having opposite ends on which linearly polarized input light beams are incident and from which output light beams are derived which create an interference pattern to be detected, wherein said optical fiber has orthogonal principal axes along which the light beams propagate at a large propagation constant difference, and the application of the linearly polarized input light beams to the opposite ends of said optical fiber coil is such that the polarization plane of the linearly polarized light beam coincides with the same principal axis on the opposite ends, wherein said optical fiber has a structure as defined by

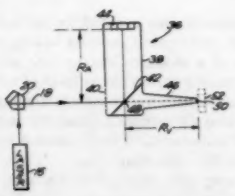
$$|N_x - N_y| > \lambda/R_o$$

where N_x and N_y are refractive indices of said optical fiber in directions of the orthogonal principal axes, R_o is the radius of said optical fiber coil, and λ is the wavelength of the light beam.

4,483,618
LASER MEASUREMENT SYSTEM, VIRTUAL DETECTOR PROBE AND CARRIAGE YAW COMPENSATOR

Martin R. Hamar, 70 Linden Tree Rd., Wilton, Conn. 06897

Filed May 24, 1982, Ser. No. 381,078
Int. Cl.³ G01B 11/00
U.S. Cl. 356—400 **23 Claims**



1. An optical device for use with a laser beam to locate the position of a measurement point, comprising:

detector means having a target point for sensing a laser beam;

mirror means for reflecting a laser beam toward said detector means;

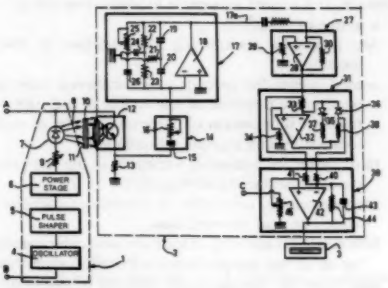
a probe element having an end point adapted to be placed on a desired measurement point; and

means for mounting said detector means, said at least one mirror and said probe element with respect to each other such that a laser beam directed toward said desired measurement point and reflected by said mirror means will fall on said target point when said probe end point is placed on said desired measurement point.

4,483,619
APPARATUS TO REGISTER THE QUANTITY OF SEBUM SECRETED BY A SKIN

Jean-Luc Léveque, Montfermeil, and Gilbert Gras, Aulnay sous Bois, both of France, assignors to L'Oreal, Paris, France

Continuation-in-part of Ser. No. 844,038, Oct. 20, 1977,. This application Apr. 6, 1979, Ser. No. 27,718
Claims priority, application France, Feb. 5, 1979, 79 02935
The portion of the term of this patent subsequent to Nov. 20, 2001, has been disclaimed.
Int. Cl.³ G01J 3/45
U.S. Cl. 356—434 **11 Claims**



1. Apparatus for registering the quantity of sebum secreted from a region of the skin of a living subject onto a translucent element comprising, a luminous flux emitter for directing luminous flux through a translucent element, the translucent element being a plate having a ground surface, a receiver on the opposite side of the translucent element for receiving the luminous flux transmitted through the translucent element by virtue of the transparency of said element, said flux emitter being modulated at a fixed frequency, and said receiver only measuring the flux received which has the frequency of modulation of the emitter, the emitter of the luminous flux comprising an electroluminescent diode, and the luminous flux receiver comprising a phototransistor, storage means for storing the value of an output voltage from the receiver resulting from a measurement of a reference specimen, said storage means comprising a digital storage unit having a register and an analog output, means for subtracting said stored value of voltage from a later output voltage of the receiver resulting from a measurement of a translucent element having sebum deposited thereon, and means for registering the value of the difference between said voltages, the storage unit including a double analog/digital and digital/analog converter with binary memory, which has an input for receiving a measuring voltage and an output for producing a reference voltage corresponding to its stored binary value, and manually operable means to reset said storage unit and to enable said unit to store a binary value corresponding to a new measuring voltage received.

4,483,620

REGENERATIVE HEATING AND MELTING DEVICE FOR RECOVERED ASPHALT CONCRETE RUBBLE

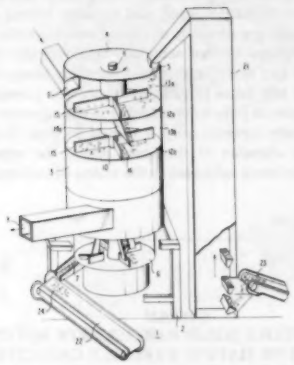
Kunio Shinohara, Nishinomiya, and Takeshi Kimura, Abiko, both of Japan, assignors to Kajima Road Co. Ltd. and Nihon Cement Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 374,589, May 3, 1982, abandoned. This application Nov. 29, 1983, Ser. No. 555,923

Claims priority, application Japan, May 15, 1981, 56-72199

Int. Cl.³ B29C 5/46

U.S. Cl. 366—7 11 Claims



1. A regenerative heating and melting device for treating asphalt concrete rubble to recover an asphalt coated aggregate suitable for reuse, comprising a vertical cylindrical casing having an upper portion and a lower portion, said casing being provided with a hot-gas inlet and an exhaust gas outlet whereby heat may be added to the upper portion of the casing, or added to the lower portion of the casing, and an outlet provided in the bottom portion of said casing, the internal space of said cylindrical casing being divided into a plurality of tier sections by partition plates, each of said plates having a diameter conforming generally to the internal diameter of said cylindrical casing, at least one of said plates having a communicating opening to communicate with the adjacent tier sections, a rotary shaft provided within the cylindrical casing and extending through said tier sections and partition plates, mixing blades mounted on and revolving with said rotary shaft in said tier sections above and in sliding contact with said partition plate to thereby enable the recovery of an asphalt coated aggregate suitable for reuse, said mixing blades being of a dimension so that, on the diameter, the dimension is slightly less than the inside diameter of the casing to permit rotation of the mixing blades inside the casing with sufficient clearance to permit movement.

4,483,621

VIBRATION TABLE

Heinz Kreiskorte, Dortmund, Fed. Rep. of Germany, assignor to Thyssen Industrie Aktiengesellschaft, Essen, Fed. Rep. of Germany

Filed Sep. 9, 1983, Ser. No. 530,971

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1982, 3235390

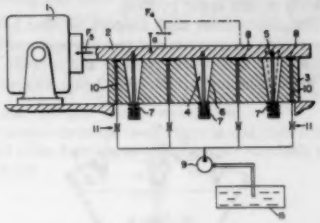
Int. Cl.³ B01F 11/00

U.S. Cl. 366—111 10 Claims

1. A vibration table, comprising:

a stationary base having a first bearing surface;

a table top for receiving loads, said table top being periodically movable back and forth, having a second bearing surface, and being supported on said base by fluid; a plurality of pressure pockets are disposed in one of said first and second bearing surfaces, said pressure pockets being adapted to receive carrier medium for effecting said fluid support of said table top on said base; and



a spring system which connects said table top to said base, said spring system including a plurality of substantially parallel and pivotably arranged coupling elements.

4,483,622

DRINK IDENTIFYING MIXER

Charles Muhi, 25457 Via Escovar, Valencia, Calif. 91355; Peter Hamernik, 8239 Lankershin, Unit "A", North Hollywood, Calif. 91605, and Miguel Szczecko, 19261 Calahan St., Northridge, Calif. 91324

Filed Jun. 9, 1980, Ser. No. 157,663

Int. Cl.³ B01F 7/00

U.S. Cl. 366—129 4 Claims

1. In a drink identifying mixer device for a drinking glass, comprising a longitudinal flush member, having a broadening end, respectively top portion, disposed coplanarly with the member, the end portion being operable as a drink mixing implement, and the top portion of the member extends right angularly rearward into a name identifying platelet, the upper surface of which being susceptible to impression of handmade or printed indicia thereon, and downwardly therefrom terminating in two legs for attachment in cooperation with the top portion and platelet of the device, onto the rim of the drinking glass, so that the name identifying surface portion of the platelet will rest on and along the rim surface of the drinking glass for easy visuality of the name identifying platelet surface.

4,483,623

MAGNETIC STIRRING APPARATUS

David L. Eaton, Horseheads, and William P. Vann, Beaver Dams, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Apr. 15, 1983, Ser. No. 485,476

Int. Cl.³ B01F 7/18, 13/08

U.S. Cl. 366—247 8 Claims

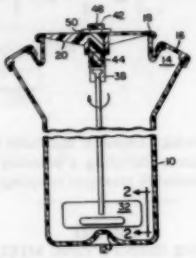
1. An improved magnetic stirring apparatus capable of suspending solids in a liquid medium comprising: a vessel for containing fluids and solids, having walls, a bottom, and an opening; a suspend stirrer having a magnetic impeller and a shaft, a means for rotating the magnetic impeller; and a closure; wherein the improvement is characterized by:

(a) the shaft having;

(i) an upper portion having a first diameter; and

(ii) a lower portion extending upwardly and outwardly toward said upper portion and having a second diameter less than the first diameter; an upper bearing surface being formed where said lower portion extends outwardly to said upper portion;

(b) an elongated planar shaft support member having two support ends, an aperture and two opposed aperture margins on either side of said aperture and between said support ends; said support member being attached to the



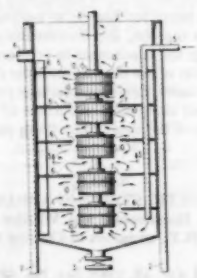
closure at the support ends and projects downwardly thereform, forming a sling; and said aperture being dimensioned and configured between the support ends to receive the lower shaft portion and allow free rotation of said suspended stirrer, said opposed aperture margins forming a lower bearing surface for engaging the upper bearing surface; and

(c) a sling bearing formed by the lower bearing surface engaging the upper bearing surface in the direction of the vessel bottom, thereby suspending the stirrer.

4,483,624
HIGH INTENSITY CONDITIONING MILL AND METHOD

Franklin C. Bacon, Jr., Macon, and Robert L. Brooks, Gordon, both of Ga., assignors to Freeport Kaolin Company, New York, N.Y.

Filed Aug. 25, 1982, Ser. No. 411,505
Int. Cl.³ B01F 7/16
U.S. Cl. 366—293 **4 Claims**



1. Apparatus for conditioning an aqueous pulp containing particles of clay and mineral impurities preparatory to subjecting said pulp to froth flotation comprising:

a conditioning vessel adapted to contain a body of said aqueous pulp;

a plurality of generally horizontal baffles disposed within said vessel and dividing the interior of said vessel into a plurality of chambers, each said baffle being formed with a central, circular hole and being mounted on the inner wall of said vessel so that pulp travelling upwardly in said vessel must pass through the central hole in each baffle;

inlet means feeding aqueous pulp to the lower-most chamber;

outlet means for removing conditioned aqueous pulp from the space above the uppermost baffle;

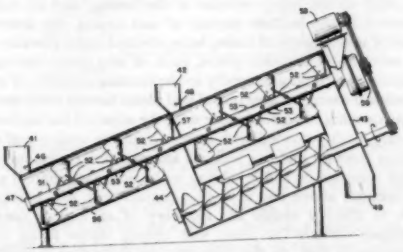
a rotatable generally vertical drive shaft centrally positioned to rotate in said vessel and extending generally concentrically through each said hole in each said baffle; and

a plurality of impellers each mounted for rotation on said shaft and generally positioned within each said hole of said horizontal baffles, each said impeller having a sidewall containing a plurality of spaced apart vertical vanes in the periphery thereof such that aqueous pulp is flung outwardly into said chamber, said impellers being of a size relative to said holes to sufficiently provide passageways for said aqueous pulp from chamber to the adjacent chambers whereby aqueous pulp is caused to flow from said lowermost chamber to the space above the uppermost baffle while being subjected to the action of said impellers.

4,483,625
CONTINUOUS SOLID PARTICULATE MIXER CONVEYOR HAVING VARIABLE CAPACITY

Glen W. Fisher, Bellevue, Wash., assignor to Technovators, Inc., Seattle, Wash.

Continuation of Ser. No. 232,950, Feb. 10, 1981, abandoned, which is a continuation of Ser. No. 961,635, Nov. 17, 1978, abandoned. This application Apr. 14, 1983, Ser. No. 485,023
Int. Cl.³ B01F 7/04
U.S. Cl. 366—297 **13 Claims**



1. A particulate material mixer-conveyor comprising:

elongated housing means for receiving a bed of particulate material, said housing means having a particulate material inlet at one end and a particulate material outlet at the other end;

means operatively associated with said housing means for introducing a second material into said housing for distribution onto a particulate material conveyed in said housing;

a shaft rotatably mounted in said housing means and extending lengthwise therethrough;

a plurality of paddles extending outward from said shaft for lifting said particulate material out of said bed, the paddles in proximity to the inlet being mounted at the highest angle relative to the shaft those in proximity to the outlet being mounted at the lowest angle and the remaining paddles being mounted at intermediate angles which gradually increase to a peak in the mid portion of the shaft; and

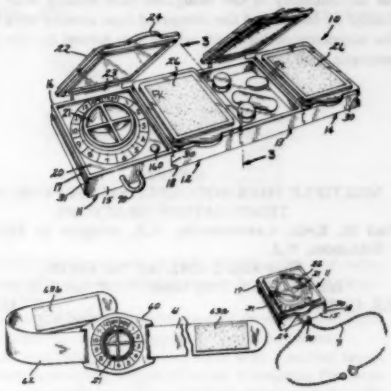
means for rotating the shaft at a speed such that said particulate material flows off the paddle as it is lifted.

4,483,626

MEDICATION TIMING AND DISPENSING APPARATUS

Terrance O. Noble, Rosemount, Minn., assignor to Apothecary Products, Inc., Burnsville, Minn.

Filed Jan. 8, 1982, Ser. No. 338,015
Int. Cl.³ G04B 47/00
U.S. Cl. 368—10 25 Claims



1. A medication organizing apparatus for holding medication and timing prescribed dose intervals, comprising:

a timer comprising rotatable selector dial means for selecting one of a plurality of numerically indicated predetermined time intervals and decoding a selected interval to binary code, digital timing means responsive to said selector dial means binary code for timing a selected predetermined time interval, indicating means responsive to said timing means for indicating the end of said time interval, means for restarting said timing means at the end of said interval to time another predetermined time interval;

a pocket-sized housing and means mounting said timer in said housing; and

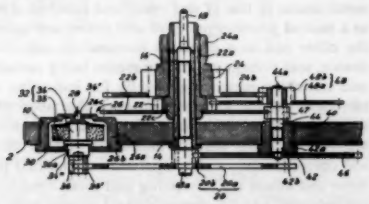
a housing for containing medication and removably interconnected with said timer housing.

4,483,627

ELECTRONIC TIMEPIECE

Jacques Müller, Reconvilier, and Jean-Claude Schaffner, Délémont, both of Switzerland, assignors to ETA S.A., Fabriques d'Ebauches, Granges, Switzerland

Continuation of Ser. No. 350,139, Feb. 19, 1982, abandoned. This application Aug. 8, 1983, Ser. No. 521,634
Claims priority, application Switzerland, Feb. 26, 1981, 1208/81
Int. Cl.³ G04B 19/00; G04C 23/02; H02K 15/00
U.S. Cl. 368—76 4 Claims



1. In a motor module for an electronic watch of the type comprising: a motor including a rotor and a stator, said stator consisting of a single flat plate having two end portions and a bore therein in which said rotor is located, an elongate core connected to and between said end portions, and a coil mounted on said core; a plurality of hand spindles; gear means for connecting said rotor to said hand spindles; and gear spindle means for mounting said gear means, the improvement comprising:

first means, secured to said plate, for mounting said hand spindles and said gear spindle means on said plate, said plate being the only mounting means for said hand spindles and said gear spindle means; and

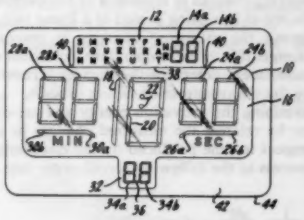
second means, mounted in said bore in said plate and secured to said plate, forming two bearings for rotatably mounting said rotor.

4,483,628

BALANCED CHRONOGRAPH DIGITAL TIME DISPLAY

Beri A. Terzian, 66 Hirst Rd., Briarcliff Manor, N.Y. 10510

Continuation-in-part of Ser. No. 53,402, Jun. 29, 1979, Pat. No. 4,264,966, which is a continuation-in-part of Ser. No. 861,115, Dec. 16, 1977, abandoned. This application Mar. 17, 1981, Ser. No. 244,760
Int. Cl.³ G04C 19/00; G04B 19/24
U.S. Cl. 368—82 21 Claims



1. A balanced general timekeeping digital display which comprises:

(a) a display background;

(b) hour elements operable for display of present or next hour digits during the same hour at substantially a central position within the background;

(c) first minute elements operable for display of minute digits in a readout position which trails the hour digits from left to right;

(d) second minute elements operable for display of minute digits in a readout position which leads the hour digits from left to right;

(e) hockey stick-shaped elements positioned below the minute elements and operable to display hockey stick-shaped lines below the minute digits;

(f) the hockey stick-shaped line below the trailing minute digits being oriented from left to right to display its short segment sloping up and away from the hour digits followed by its longer segment; and

(g) the hockey stick-shaped line below the leading minute digits being oriented from left to right to display its longer segment followed by its short segment sloping down and toward the hour digits.

4,483,629

DYNAMIC TESTING OF ELECTRICAL CONDUCTORS

James A. Schwarz, Fayetteville, and Robert W. Pasco, Syracuse, both of N.Y., assignors to Syracuse University, Syracuse, N.Y.

Filed Jan. 5, 1983, Ser. No. 455,852
Int. Cl.³ G01N 27/14; G01R 27/02
U.S. Cl. 374—57 10 Claims

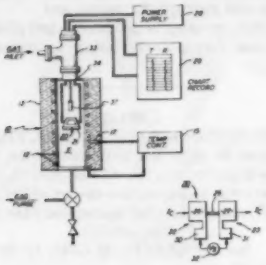
1. A method for determining the kinetic parameters of activation energy and pre-exponential factor which characterizes

electromigration failure in a thin film conductor that is subject to high current densities at elevated temperatures, said method includes the steps of

placing a thin film conductor in a predetermined atmosphere,

electrically stressing the thin film conductor, while in said atmosphere, by applying a uniform current thereto,

heating the stressed conductor to increase the conductor temperature at a linear rate with respect to time,



measuring changes in resistance of the current stressed conductor as it is being heated at a linear rate,

reducing the measured changes in resistance by those changes due to the temperature dependent components of resistance to determine the changes in resistance produced by the electromigration failure process,

determining the activation energy and pre-exponential factor by relating the measured changes in resistance with respect to time produced by the electromigration failure process to the following zeroth order rate expression:

$$\frac{1}{R_0}\frac{dR}{dt} = A \exp(-Q/kT)$$

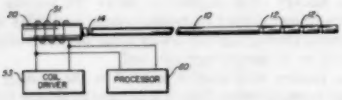
where: R_0 is the initial resistance of the thin film conductor, dR/dt is the variation in the conductor resistance produced by the electromigration process, Q is the activation energy for the process, A is the pre-exponential for the process, k is Boltzmann's constant and T is absolute temperature.

4,483,630

ULTRASONIC THERMOMETER

David W. Varela, Tucson, Ariz., assignor to Thomas M. Kerley, Albuquerque, N. Mex., a part interest

Filed Jun. 4, 1982, Ser. No. 385,294
Int. Cl.³ G01K *11/22*
U.S. Cl. 374—119 **9 Claims**



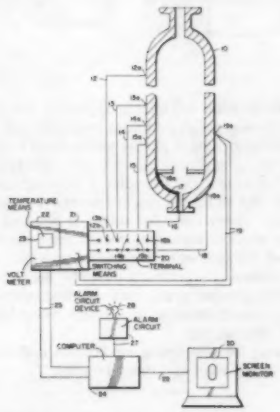
1. An improved ultrasonic thermometer of the pulse-echo type for measuring temperature comprising a magnetostrictive head, an acoustic pulse generating and pulse sensing means proximate said magnetostrictive head, said acoustic pulse generating and sensing means including a position electromagnetic coil surrounding said magnetostrictive head, and an elongated heat sensing wire joined to said magnetostrictive head, said elongated heat sensing wire having at least one surface discontinuity thereon, said acoustic pulse generating and pulse sensing means further including a cup-like lock having an open end receiving said magnetostrictive head and passing said elongated heat sensing wire through an opening in its opposite otherwise closed end, said lock adapted to secure said pulse generating and pulse sensing means to said elongated heat sensing wire proximate said magnetostrictive head, said lock defining material acoustically mismatched to said elongated heat sensing wire whereby when said electromagnetic coil generates an acoustic pulse in said magnetostrictive head, said magnetostrictive head transfers the pulse to said elongated heat sensing wire and the acoustic pulse propagates along the elongated heat sensing wire whereupon it is partially reflected by the discontinuity in the elongated heat sensing wire and reflected by the end of the elongated heat sensing wire back to the magnetostrictive head where it is sensed by the electromagnetic coil.

4,483,631

MULTIPLE THERMOCOUPLE SYSTEM FOR HIGH TEMPERATURE REACTORS

Paul H. Kydd, Lawrenceville, N.J., assignor to HRI, Inc., Gibbsboro, N.J.

Filed Aug. 2, 1982, Ser. No. 404,181
Int. Cl.³ G01K *7/08*; G08B *29/00*; G06F *15/46*
U.S. Cl. 374—141 **12 Claims**



1. A thermocouple system for rapidly monitoring wall temperatures of a metal vessel, comprising:

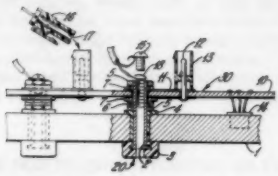
(a) a thermocouple metal conductor wire attached at one end of a first junction point on a metal vessel and attached at the other end to a switching device arranged to connect said conductor wire to a voltage measuring means said first conductor wire being composed of a metal different from that of said vessel; and

(b) a second thermocouple conductor wire spaced from said first thermocouple conductor wire and composed of a metal similar to that of said vessel and attached at one end to a second junction point on said vessel and attached at the other end to a common terminal of said switching device, said voltage measuring means being connected to said switching means sequentially for indicating a small electrical voltage generated in each thermocouple conductor pair consisting of said first conductor wire and said second conductor wire to indicate a voltage difference and corresponding wall temperature at said first junction point and means for processing said small electrical voltage indicated and for comparing said voltage with another voltage generated from a reference thermocouple means attached to a point on said metal vessel where the temperature is stable.

4,483,632
ISOTHERMAL PANEL ASSEMBLY FOR TERMINATING A PLURALITY OF THERMOCOUPLE LEADS

Keith L. Dewey, Reynoldsburg, and Eugene C. Varrasso, Heath, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jul. 15, 1982, Ser. No. 398,537
Int. Cl.³ G01K *1/14, 7/12*
U.S. Cl. 374—182 **13 Claims**



1. An isothermal panel assembly for terminating and maintaining a plurality of thermocouple leads at a common temperature comprising:

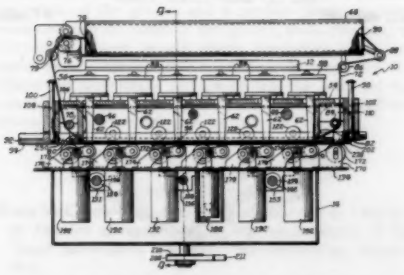
jacks for providing a means to connect thermocouple input leads while providing recorder termination means;

said jacks interconnecting a first layer with a second layer, said first layer being a mass of metal to maintain the jacks at the same temperature as said first layer such that the mass of metal is electrically insulated from, but thermally conductive to, the jacks, and said second layer being a printed circuit board for interconnecting the thermocouple input from the jacks to an output terminal; and a temperature transducer embedded in the first layer having its leads connected to said second layer to determine the temperature of the first layer.

4,483,633
MATRIX PRINT HEAD PRINTER

Jerry J. Kosner, Jr., LaGrange; Michael Wisniewski, Bolingbrook, and Tom Faber, Skokie, all of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Feb. 18, 1983, Ser. No. 467,628
Int. Cl.³ B41J *3/54, 3/12, 13/08*
U.S. Cl. 400—82 **23 Claims**

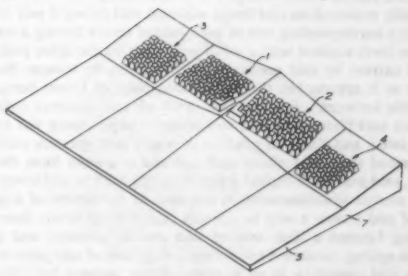


1. In a matrix printing apparatus of the type having a path for sequentially transporting a series of documents to be printed between dot matrix ballistic print head means and back-up means oppposite said print head means; transport means for driving each said document along said path; said dot matrix ballistic print head means adapted, when actuated, to simultaneously impact an ink source and one side of each said document as each said document passes said print head means to apply printed material to each said document in a pre-programmed array, said dot matrix ballistic print head means also impacting upon said back-up means when applying printed material to said documents, the improvement comprising means to selectively move said back-up means from a first position immediately adjacent said print head means when said print head means is actuated to apply printed material to said documents, to a second position at a distance from said print head means when said print head means is not actuated, whereby said back-up means is removed from said path when said print head means is not applying printed material to said document to provide a relatively unobstructed path for transporting said documents when said printing head means is not actuated; said back-up means comprising roller means mounted on said apparatus for rotative movement under the influence of said documents as each said document is transported along said path when said back-up means is in said first position and mounted for pivotal movement between said first and second positions under the influence of selectively operable actuator means operably connected to each of said roller means.

4,483,634
KEYBOARD ARRANGEMENT

Werner U. Frey, Thalwil; Johannes Rometsch, Rickenbach, and Hans Diem, Richterswil, all of Switzerland, assignors to International Standard Electric Corporation, New York, N.Y.

Continuation of Ser. No. 324,218, Nov. 23, 1981, abandoned.
This application Jul. 13, 1983, Ser. No. 513,124
Claims priority, application Switzerland, Dec. 19, 1980, 9398/80
Int. Cl.³ B41J *5/10*
U.S. Cl. 400—489 **11 Claims**



1. A keyboard arrangement for typewriters and data input devices comprising:

at least two adjacent keyfields each having plurality of keys mounted on a support having a substantially rectangular basal surface settable on a plane surface, each of said two keyfields being mounted on a different one of two surfaces of said support opposite said basal surface inclined with respect to each other and intersect each other on a line perpendicular to an operator-side edge of said support at an angle β less than 180° open towards said basal surface, said intersecting line intersecting a plane parallel to said basal surface at an angle γ open towards an edge of said support opposite said operator-side edge of said support;

said plurality of keys of each of said two keyfields being disposed in a plurality of rows and columns with said columns of one of said two keyfields intersecting said columns of the other of said two keyfields in an angle α open towards said operator-side edge of said support; and said support includes a wedge shaped portion extending from said two surfaces of said support to said operator-side edge of said support to provide an arm rest for an operator and wherein said wedge shaped portion tapers toward said operator-edge at an angle of inclination substantially equal to said angle γ and tapers toward a side edge perpendicular to said operators side edge at an angle

which is one half of β with respect to a line perpendicular to said basal surface.

4,483,635

PAPER GUIDE FOR PRINTERS

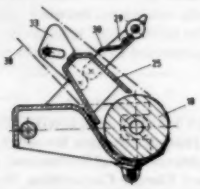
Ingo Wisner, Remchingen, and Adolf Bley, Pforzheim, both of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 25, 1982, Ser. No. 436,248

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1981, 3142700

Int. Cl.[3] **B41J** *11/66, 15/16, 13/036, 13/16*

U.S. Cl. 400—642 **2 Claims**



1. In a printer, the combination comprising: a supporting frame; a platen supported on said frame; a shaft; a forward pair of levers having rearward ends rotatably mounted on said frame and forward ends carrying said shaft; a pair of pressure rolls rotatably mounted on said shaft in a position engageable with said platen; a rearward pair of levers having forward ends rotatably mounted on said frame adjacent said forward pair of levers, a corresponding one of each pair of levers having a set of gear teeth meshed with a set of gear teeth on the other pair; a rod carried by said rearward pair of levers to tension the paper as it approaches the platen; said pairs of levers being movable between a first position in which said pressure rolls contact said platen and said rod contacts paper being fed to said platen, and a second position in which said pressure rolls are spaced from said platen and said rod is spaced from the paper, said gear teeth on said levers enabling each of said levers to be moved simultaneously in response to movement of any one of said levers; a stop to prevent said pairs of levers from rotating beyond a limit toward said second position; and a tension spring connected to corresponding ones of said pairs of levers and operating in an over-the-center manner between said first and second positions to maintain said levers stably in either of said first or second positions.

4,483,636

SUNTAN OIL APPLICATOR

Tracey K. Meyer, 4444 SW. 66 Ter., Davie, Fla. 33314

Filed May 2, 1983, Ser. No. 490,303

Int. Cl.[3] **A47L** *3/30*; **A45D** *40/26*

U.S. Cl. 401—266 **7 Claims**

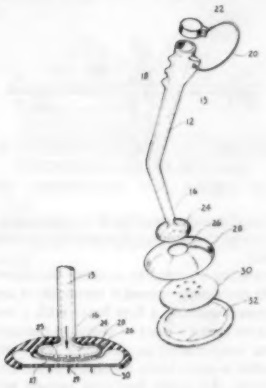
1. An applicator for disposing liquid upon remote portions of the human body, comprising:

(a) a deformable elongate tubular member having a proximate end and a distal end, the distal end comprising a hollow, ellipsoidal structure, said elongate tubular member having therewithin an elongate supply cavity extending the entire length thereof and terminating in an orifice at said ellipsoidal distal end of the tubular member, the proximate end of said tubular member comprising the point of entry for the addition of liquid to the applicator;

(b) an end cap detachably mountable to said proximate end of said tubular member;

(c) a hollow deformable dispensing head having, in communication therewith, socket means for accomplishing a press-fittable rotational connection with said ellipsoidal structure of said elongate tubular member, said socket means including at least one orifice for the receipt of liquid from said ellipsoidal structure, said dispensing head including a reservoir for the receipt of liquid through said orifices of said socket means, said dispensing head also comprising a substantially flat application surface demountably disposed upon the side of said dispensing head opposite to said socket means, said application surface having therein a plurality of orifices; and

(d) a compressible porous pad detachably attached about the entire dispensing head including about the flat application surface,



whereby liquid may be effectively advanced through the said elongate tubular member, through said internal reservoir thereof, through the orifice at the distal end thereof, into and through the orifice of said socket means, into the dispensing head and, therefrom, into and through said flat application surface and, therefrom, into said compressible porous pad, thereby effectuating a uniform deposition of liquid upon the body of the user.

4,483,637

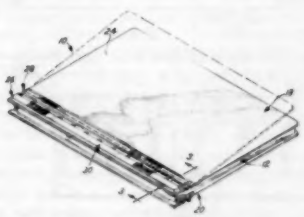
BINDER FOR BUSINESS FORMS

William C. Updegrave, Fords, N.J.; Charles E. Jones, Evanston, Ill., and Jerome E. Froehlich, Midland, Mich., assignors to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Jun. 29, 1982, Ser. No. 393,318

Int. Cl.[3] **B42F** *13/02, 15/00*

U.S. Cl. 402—15 **9 Claims**



1. A binder assembly for securing and storing business forms of the type having apertures therein, said assembly comprising first and second cover members and first and second elongated flexible securing means removably received by both of said first and second cover members, said cover members and said securing means being constructed and arranged to removably secure said business forms in position between said cover members, said securing means being constructed and arranged to pass through selected ones of said apertures in said business forms, each of said cover members being unitarily formed and

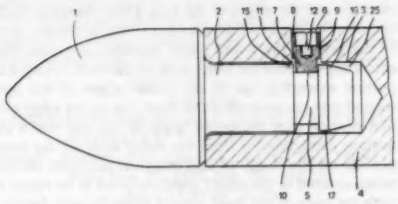
having a cover portion being of a size for substantially covering and for being superimposed over a selected number of secured and stored business forms, each of said cover members also having a contiguous marginal edge portion unitary with said cover portion, spaced openings provided in said edge portion, each of said openings being positioned for alignment with said selected apertures of said forms and being constructed and arranged to receive said elongated flexible securing means, and means defined on and unitary with said marginal portion for removably receiving and securing portions of said flexible securing means, both of said flexible securing means and both of said cover members being of substantially the same construction and defining the only parts of said binder assembly and the only operative parts required for removably securing said forms in place between said cover members with said forms being received by said flexible securing means.

4,483,638

DEVICE FOR FIXING A PIERCING OR EXPANDING PLUG TO A PIERCING OR EXPANDING BAR

Roland Marie, Valenciennes; Michel Locoge, Quarouble, and Patrick Lambay, Valenciennes, all of France, assignors to Vallourec, Paris, France

Filed May 29, 1981, Ser. No. 268,175
Int. Cl.³ F16D *1/00*; B25G *3/00*
U.S. Cl. 403—20 **6 Claims**



1. A rapid dismantling and reassembly device for securing a plug to the end of a bar wherein one end of the bar comprises a socket and has a smooth hole communicating between an outside surface of the bar and the socket and wherein the plug is affixed to a shank which rests in said socket, said shank having on its periphery an annular groove, the device comprising a locking means which rests in said hole and has a front end which extends into said annular groove, the front end having a cross section having a larger dimension which is greater than the width of the groove and a smaller dimension which is narrower than the width of the groove, and a retaining means comprising a ring having elastic properties, said retaining means being disposed within said hole between said locking means and the outside surface of said bar and said locking means including a gripping means for removing said locking means and said retaining means from said hole.

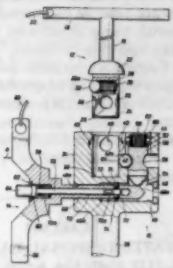
4,483,639

CONNECTION SYSTEM

Bruce McCandless, II, Seabrook, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 30, 1982, Ser. No. 393,582
Int. Cl.³ B25G *3/00*
U.S. Cl. 403—317 **22 Claims**

1. A mechanical connection system comprising:
first and second bodies having matable formations;
coupling means cooperative between said bodies for selectively maintaining said formations in mated condition, said coupling means comprising operator means located internally of said first body;
actuator means selectively insertable into and disengagable from said first body, said actuator means being movable relative to said first body when so inserted therein for engagement with and operation of said operator means; and



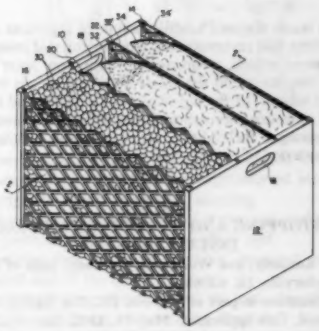
means for selectively engaging said actuator means within said first body and for totally removing said actuator means from within sid first body.

4,483,640

EROSION CONTROL DEVICE

Robert C. Berger, Rte. 1, Box 311-13, Stafford, Va. 22554, and James W. Smack, Rte. 1, Box 346-S, Leesburg, Va. 22075

Filed Sep. 9, 1981, Ser. No. 300,563
Int. Cl.³ E02B *3/04*
U.S. Cl. 405—15 **2 Claims**



1. A portable erosion control device for filtering run-off water comprising:
two substantially vertically disposed side members;
two substantially vertically disposed end members substantially orthogonally disposed with respect to said side members for interconnecting said side members in a spaced apart relationship for forming a box-like framework;
said side members having a plurality of openings large enough to permit a flow of water therethough, said end members being substantially impervious to the flow of water therethrough;
at least two substantially vertically disposed, removably mounted, partition members extending between the end walls of said box-like framework, said partition members being substantially orthogonally disposed with respect to said end members and being substantially parallel to said side members and spaced from said side members and from each other for forming a plurality of compartments with said box-like framework, said partition members having a plurality of openings therein to permit the flow of water therethrough and at least one of said partition

members including a filter sheet or cloth extending across its surface;

gripping means being positioned on said end members for facilitating lifting and subsequent positioning of said box-like framework relative to ground level; and

filtering material being positioned between said partition members and said side members;

said box-like framework includes an open bottom and open top, said open top being adapted to receive said filtering material within said plurality of compartments for filtering run-off water passing therethrough, said open bottom being adapted to permit filtering material to be dispensed therefrom when said box-like framework is elevated above ground level.

4,483,641

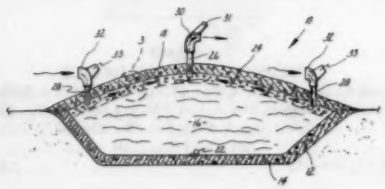
WASTE DISPOSAL LANDFILL

Ulrich W. Stoll, 2121 Hall, Ann Arbor, Mich. 48104

Filed Jan. 27, 1983, Ser. No. 461,338

Int. Cl.³ B09B *1/00*

U.S. Cl. 405—129 **20 Claims**



1. In a waste disposal landfill having an inground reservoir, waste within said reservoir, and a cover for said reservoir, the improvement which comprises a ventilation layer disposed between the cover and the waste including means to provide subjacent support of the cover and to intercept and temporarily retain moisture percolating through the cover, and containing air passages throughout, and means for ventilating said layer to exterior of the covered reservoir.

4,483,642

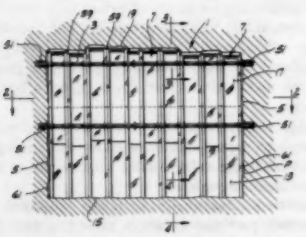
MINE STOPPING AND METHOD OF AND JACK FOR INSTALLING SAME

John M. Kennedy, and William R. Kennedy, both of P.O. Box 38, Taylorville, Ill. 62568

Continuation-in-part of Ser. No. 252,578, Apr. 9, 1981, abandoned. This application May 11, 1982, Ser. No. 376,957

Int. Cl.³ E21F *1/14*

U.S. Cl. 405—132 **19 Claims**



1. A mine stopping comprising:

a plurality of elongate extensible panels adapted to extend vertically in side-by-side relation from the floor to the roof of a passageway in a mine,

each panel comprising a first elongate member constituting a lower member of the panel adapted for engagement of its lower end with the floor of the passageway, and a second elongate member constituting an upper member of the panel adapted for engagement of its upper end with the roof of the passageway,

each of said panel members being a sheet metal member of channel shape in cross section having a web and flanges at opposite sides of the web, each flange having an inturned portion at its outer edge extending generally parallel to the web and a lip at the inner edge of the inturned portion extending inwardly toward the web,

one of said members having a telescoping sliding fit in the other with the webs of the members in engagement, the one member constituting the inner member and the other constituting the outer member of the panel, a plurality of the panels being adapted to be installed in a passageway with the side flanges of the outer members generally in engagement,

the lips of the upper member of each panel terminating short of the upper end of the upper member and thereby providing a notch at the upper end of each lip,

the upper member of each panel having a head at its upper end comprising a sheet metal member having a length less than the distance between the flanges of the upper member and greater than the distance between said lips,

the head being generally of channel shape in transverse cross section having a web of a width slightly less than the distance between the web of the upper panel member and the edges of the lips fitting between the web of the upper member and the edges of the lips, a first flange extending up from the edge of the web of the head at the inside face of the web of the upper panel member, a second flange extending up from the other edge of the web having a first portion extending up on the inside edges of the lips, a second portion extending out from the upper edge of the first portion over the upper edges of the lips, and a third portion extending up from the outer edge of the second portion on the inside of said inturned portions, the head being secured in the upper panel member at its upper end with the ends of the head spaced from the side flanges of the upper panel member,

the lower member of each panel having a foot at its lower end comprising a sheet metal member having a length less than the distance between the flanges of the lower member and greater than the distance between said lips,

the foot being secured in the lower panel member at its lower end with the ends of the foot spaced from the side flanges of the lower panel member

and a sealing member pocketed in said head and extending up out of the upper end of said upper member for engagement with said roof,

the spacing of the ends of the head from the side flanges of the upper panel member and the spacing of the ends of the foot from the side flanges of the lower panel member permitting the flanges to move toward one another with accompanying bowing of the webs of the panel members to preserve the integrity of the stopping on relative lateral movement of the ribs of the passageway toward one another with resultant compression of the stopping from the sides thereof.

4,483,643

CANAL BED SHELL

Horst Guggemos, Herbersteinstr.92, A-8052 Graz, Austria

Filed Mar. 1, 1982, Ser. No. 352,887

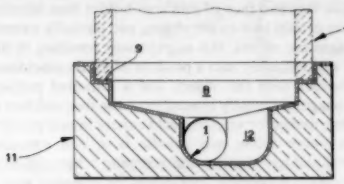
Claims priority, application Austria, Mar. 11, 1981, 1118/81

Int. Cl.³ B63B *35/04*

U.S. Cl. 405—154 **8 Claims**

1. A manhole construction comprising a vertical shaft that provides for access to a liquid conveying sewer system therebelow, a canal bed shell that is disposed beneath said shaft and that is accessible therethrough, said canal bed shell including an open top bottom portion that has a generally U-shaped configuration and that defines a channel therein, tube portions

joined to opposite ends of said bottom portion and communicating with said channel, the height of said bottom portion being defined by the height of said channel as formed therein and, the height of said bottom portion being substantially the same as the interior diameter of said tube portions wherein smooth and uninterrupted flow of liquid through said channel is provided, said canal bed shell further including a berm portion that defines planar surfaces that are located adjacent to said channel and that are formed as an integral part of said bottom portion, the peripheral edges of said berm portion



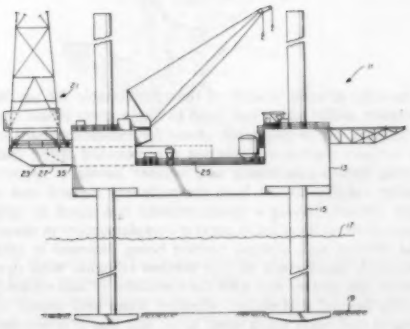
being generally curved in configuration, a shoulder being formed in said body portion adjacent to the peripheral edges of said berm portion and defining an annular shelf, said vertical shaft being received on said annular shelf in sealing relation and providing access through the interior thereof to said canal bed shell, tubes forming part of said sewer system sealingly engaging said tube portions, the internal diameter of said tube portions having substantially the same diameter as the internal diameter of said tubes, wherein liquid can flow uninterruptedly through said channel without becoming clogged therein.

4,483,644

CANTILEVERED MOBILE MARINE RIG WITH HYDRAULIC LOAD EQUALIZER

Thomas P. Johnson, P.O. Box 246, Orange, Tex. 77630

Filed Sep. 15, 1982, Ser. No. 418,232
Int. Cl.³ E02B *17/00*
U.S. Cl. 405—201 **14 Claims**



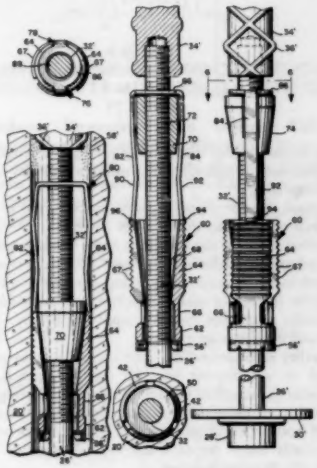
1. A mobile marine rig, which comprises;
a deck structure having an outboard edge;
a cantilever assembly including well drilling means mounted at one end thereof, said cantilever assembly being slidingly mounted for horizontal movement on said deck structure to project said one end of said cantilever assembly beyond said outboard edge of said deck structure;
and a plurality of horizontally spaced apart cylinders of substantially equal diameter supported by said deck structure adjacent said outboard edge beneath said cantilever assembly, each of said cylinders having vertically slidingly mounted therein a piston arranged to transmit forces to said cantilever assembly, and means for supplying hydraulic fluid to and hydraulically interconnecting each of said cylinders to allow free flow of hydraulic fluid among said cylinders, thereby to equalize the pressure within each of said cylinders and equalize the force applied to said cantilever assembly by each of said pistons.

4,483,645

COMBINATION EXPANSION SHELL AND RESIN SECURED MINE ROOF ANCHOR ASSEMBLY

Claude C. White, Birmingham, and Frederick Carr, Tuscaloosa, both of Ala., assignors to Birmingham Bolt Company, Birmingham, Ala.

Filed Feb. 16, 1982, Ser. No. 349,006
Int. Cl.³ E21D *20/02*
U.S. Cl. 405—261 **18 Claims**



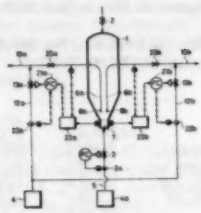
1. A mine roof anchor assembly in combination with a dual compartment resin and catalyst cartridge inserted into a mine roof opening, the anchor assembly including
(a) an elongated bolt having a head at one end, and threaded for a portion of its length at the other end
(b) a mixing and securing member engaged with the threaded end of the bolt
(c) an expansion member carried by said elongated bolt adjacent said mixing and securing member
(d) said expansion member comprising an expansion shell having wedge segments carried by said elongated bolt
(e) a bail member including spaced legs, the lower ends of which are connected to diametrically opposed portions of the upper extremities of said wedge segments
(f) a connecting portion joining the upper ends of said legs
(g) said connecting portion having an opening through which said elongated bolt passes for engagement with the mixing and securing member
(h) a wedge member threadedly engaged with said elongated bolt between the legs of said bail member and in predetermined relation to said wedge segments
(i) the resin and catalyst cartridge being ruptured by said mixing and securing member when it is forced upwardly into the mine roof opening, thereby permitting the resin and catalyst to gravitate downwardly between the wall of the opening and said mixing and securing member, and
(j) means for activating said expansion shell into gripping engagement with the mine roof after continuously mixing the resin and catalyst by rotating said elongated bolt a predetermined number of revolutions, at which time the resin and catalyst are properly mixed to act as a setting agent.

4,483,646

APPARATUS FOR DISTRIBUTING POWDERED PARTICLES

Takashi Moriyama, Tokyo, Japan, assignor to Denka Consultant & Engineering Co., Ltd., Tokyo, Japan

Filed May 7, 1982, Ser. No. 375,826
Int. Cl.³ B65G *53/66*
U.S. Cl. 406—14 **5 Claims**



1. An apparatus for distributing powdered particles from a single pressurized transporting vessel to a plurality of receiving ends, comprising:

a pressure line for supplying a pressurized gas to the vessel;

a plurality of transporting pipes extending from the transporting vessel to the receiving ends, through said pipes the powdered particles in the vessel being distributed to the receiving ends, said transporting pipes having discharging nozzles at ends of said transporting pipes inside the vessel;

a plurality of booster lines for supplying booster gas to each of said transporting pipes;

a plurality of booster flow rate control valves provided in each of said booster lines for controlling a flow rate of booster gas supplied to each of said transporting pipes; and

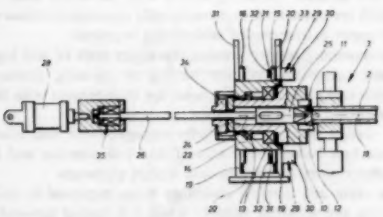
a plurality of booster flow rate controllers for controlling said booster flow rate control valves, respectively, substantially based on each differential pressure of each of said discharging nozzles.

4,483,647

CENTERED PIPE MACHINING ARRANGEMENT

Johannes Gardian, Paderborn-Elsen, and Wilhelm Beine, Borchen, both of Fed. Rep. of Germany, assignors to Benteler-Werke AG, Paderborn, Fed. Rep. of Germany

Filed Jun. 11, 1982, Ser. No. 387,516
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1981, 3139262
Int. Cl.³ B23B *49/00, 3/24, 5/16*
U.S. Cl. 408—82 **9 Claims**



1. In an arrangement for performing machining, especially facing and chamfering, operations at end faces of tubular objects, particulary pipes, of different diameters, a combination comprising a support; means for clampingly holding the respective tubular object on said support; a tool holder assembly including a carrier and a tool holder having a free end face mounted on said carrier for at least rotational movement about an axis and having a central passage centered on said axis; at least one tool mounted on the free end face of said tool holder; means for mounting said carrier on said support for relative displacement with said tool holder axis parallel to the object axis at least along a plane substantially normal to said axes; means for centering said tool holder relative to the object, including a spindle having a free end axially guided in said passage and having a tapering end portion on said spindle free end and extending toward the object, and means for moving said spindle in said passage between an extended position in which said tapering end portion is at least partly situated axially beyond the free end face of said tool holder thus interfering with access of said tool to the object, and partially extends into and engages the object, this engagement resulting in displacement of said assembly into a position of axial coincidence of said tool holder with the object, and a retracted position within said passage and axially inward from the free end face of said tool holder; means for arresting said carrier in said position of axial coincidence while said spindle is in said extended position thereof and maintaining said arresting when said spindle is in said retracted position; and means for effecting said at least rotational movement of said tool holder when said spindle is in said retracted position thereof.

4,483,648

BOLT TENSION INDICATING MEANS

Emanuel H. Trungold, 14-B Broun Pl., Bronx, N.Y. 10475

Division of Ser. No. 55,988, Jul. 9, 1979, Pat. No. 4,303,001, which is a continuation-in-part of Ser. No. 825,558, Aug. 18, 1977, Pat. No. 4,164,164, which is a continuation-in-part of Ser. No. 704,768, Jul. 13, 1976, abandoned. This application Aug. 10, 1981, Ser. No. 291,459
Int. Cl.³ F16B *31/02*
U.S. Cl. 411—10 **7 Claims**

1. In a flat annular washer of the type suitable for use in cooperation with a nut or bolt head having a given radius, the improvement which comprises means for indicating that the stress on said washer has reached a preselected level, said indicating means comprising said washer having a groove extending radially inward from the periphery thereof, and a resilient element having a predetermined bias equal to said preselected stress level and a portion complementary in shape to said groove, said element portion being disposed in said groove with one surface of said portion coplanar with one surface of said washer and with the remainder of said element extending beyond said radius, whereby when said washer is stressed to said preselected stress level, said bias is overcome thereby moving said remainder of said element relative to said washer.

4,483,649

BLIND HOLE ANCHOR NUT FASTENER

Martin G. Ollis, Butler's Leap, Clifton Rd. Industrial Est., Rugby, Warwickshire, England

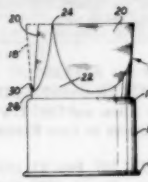
Filed Dec. 13, 1982, Ser. No. 448,948
Int. Cl.³ F16B *13/06*
U.S. Cl. 411—41 **4 Claims**

1. A blind hole anchor nut fastener device comprising a tubular sleeve and a screw-threaded nut of substantially similar length connected to an end of the sleeve through a shear zone, wherein the improvement comprises

(a) a frusto-conical surface, extending throughout the length

of the nut, which consists essentially of at least three generally triangular portions each of which terminates in an apex at the larger end of the nut, and

(b) at least three generally triangular machined-away faces, each of which occupies the space between two generally triangular portions of the frusto-conical surface, and each of which is arcuate about an eccentric axis, is tapered



oppositely to the frusto-conical surface, and extends substantially throughout the length of the nut,

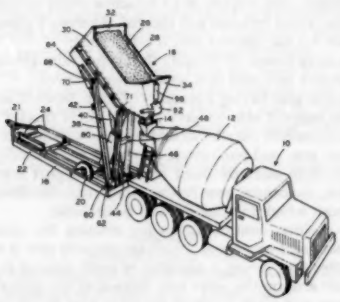
(c) the internal diameter of the tubular sleeve being slightly less than the average diameter of the nut, and the sleeve being stretched with substantial uniformity throughout its length when the nut is pulled into substantial coincidence with the sleeve by means of a threaded mandrel.

4,483,650

HYDRAULICALLY OPERATED BATCH-LOADER FOR DRY MIX CONCRETE

Royal W. Sims, 6451 Holladay Blvd., Salt Lake City, Utah 84121

Filed Aug. 7, 1978, Ser. No. 931,449
Int. Cl.³ B65G *69/00*
U.S. Cl. 414—21 **7 Claims**



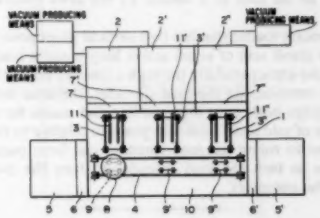
1. Apparatus for batch-loading dry mix concrete, comprising a frame, ground supporting wheels pivotally mounted on said frame, hydraulic means for supporting said frame and providing upwardly retractile movement of the ground supporting wheels whereby said frame is held in operative position, scale means carried by said frame and adapted to measure the weight of the load and constituents per load, a hopper horizontally positioned on said scale while in load-receiving position and having side walls and a narrowing cross-section chute end adapted to serve as a dispensing chute while the container is raised and tipped on end, a first pair of beams having pivotal supports at one end of said frame and pivotally attached at the base of said container through an elongated slot, a second pair of beams also pivotally connected at the same end of said frame and said hopper at the end depending while the container is in raised position, a first hydraulic lift mechanism pivotally connected at the end of said frame adjacent the pivotal connection of said beams with said frame and having an elongatable piston including an articulated connection with said hopper at the end of said hopper which is depending while the hopper is in raised position, said lift mechanism being extendible to successively raise the hopper through composite vertically upward and tipping movements so that the tapered chute end of the hopper is first raised and then brought in a downward pointing direction, and a second hydraulic mechanism secured to said first mentioned beams and to said base of said container to effect additional movement of said container through the slotted connection and thereby effecting additional vertical orientation of said container whereby the contents of said container are dispensed through the chute.

4,483,651

AUTOMATIC APPARATUS FOR CONTINUOUS TREATMENT OF LEAF MATERIALS WITH GAS PLASMA

Hisashi Nakane, Kawasaki; Akira Uehara, Yokohama; Shigekazu Miyazaki, Sagamihara; Hiroyuki Kiyota, Hiratsuka, and Isamu Hijikata, Tokyo, all of Japan, assignors to Tokyo Ohka Kogyo Kabushiki Kaisha, Kanagawa, Japan

Filed Aug. 13, 1981, Ser. No. 292,417
Claims priority, application Japan, Aug. 14, 1980, 55-114556[U]
Int. Cl.³ B65G *47/24*
U.S. Cl. 414—217 **6 Claims**



1. An automatic apparatus for the continuous treatment of wafer materials with gas plasma comprising a plural number of adjoining, separate gas plasma reaction chambers for the treatment of the wafer materials arranged in an array, a transfer means for bringing the wafer materials into and out of the gas plasma reaction chamber and an automatic control means: each gas plasma reaction chamber having an inlet shutter said transfer means for the wafer materials being composed of a transfer chamber, a main transfer conveyor in said transfer chamber extending in parallel with the array of said gas plasma reaction chambers over the whole length of said array, branched transfer conveyors in said transfer chamber provided in the same plural number as the gas plasma reaction chambers each connecting the main transfer conveyor and the inlet of one of the said gas plasma reaction chambers, plural means in said transfer chamber for transferring the wafer material from the main transfer conveyor to one of the branched transfer conveyors and plural means, in said transfer chamber each provided in the vicinity of the inlet of one of the gas plasma reaction chambers for transferring the wafer material from one of the branched transfer conveyors into the corresponding gas plasma reaction chambers, said transfer chamber having an inlet shutter and an outlet shutter; and

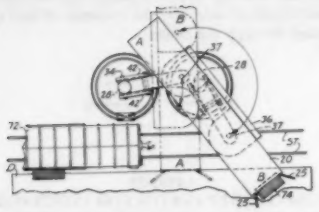
independent vacuum-producing means for each of said gas plasma reaction chambers and said transfer chamber;

said automatic control means being operable to bring the said transfer means and the gas plasma reaction into continuous and successive linkage operation.

4,483,652
TWO-ARM ROTARY LOADER AND METHOD OF OPERATION

Leonard D. Barry, 19300 Pennington Dr., Detroit, Mich. 48221

Filed Jan. 8, 1982, Ser. No. 338,069
Int. Cl.³ B65G *67/02*; B60P *1/64*
U.S. Cl. 414—392 **15 Claims**



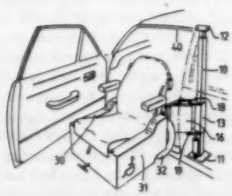
1. The method of using a two-parallel arm rotary loader, that has two vertical pivot posts each with a rotary arm of equal active length and a load spreader linking the arms parallelly through a transfer arc, comprising the following steps: step 1, turning the arms in the parallelogram mode to align with each other into one line; step 2, from there rotating the arm which is then pointing away from the other arm to turn the load thereon for convenient end loading or unloading; step 3, to later return the arms to the parallel in-line position of step 1 and move them together into parallelogram form for the later transfer of the load to a vehicle by the arms revolving parallelly.

4. A rotary loader that has two vertical pivot posts each with a rotary crank arm of equal active length and a load spreader linking the arms parallelly through a transfer arc for transfer of a cargo container on the load spreader, the arms being moveable to align both arms into one line and means for turning at least one of said arms from that position relative to the other of said arms to rotate the load spreader out from parallelogram positions to turn the load spreader to turn the container to access the container.

4,483,653
WHEELCHAIRS

Brian Waite, Lower Barn, Bodiam, Robertsbridge, Sussex, England

Filed Dec. 9, 1981, Ser. No. 329,110
Int. Cl.³ B60P *1/46*; B62M *1/14*
U.S. Cl. 414—541 **7 Claims**

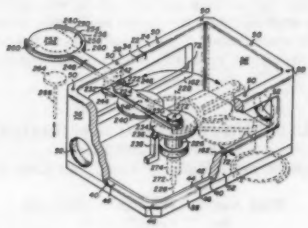


1. A motor vehicle fitted with a mechanism for transferring a wheelchair through a side door opening of the vehicle, the mechanism comprising a hoist mechanism mounted in the vehicle adjacent the side door opening, and a linkage for linking the wheelchair frame to the hoist mechanism, the linkage including an outer pivot for mounting the wheelchair frame and means constraining the pivot to follow a fixed predetermined path generally transverse to the door opening while moving from an extended position disposed outside the vehicle to a retracted position disposed within the vehicle whereby transfer of the wheelchair into the vehicle is completed by pivoting the frame about the pivot, the hoist mechanism including a hoist member slidably and non-rotatably mounted on an upright support member, the linkage including an inner pair of parallel links pivoted on the hoist member for rotation about respective generally vertical axes, the outer ends of the inner pair of links being pivotally connected to spaced apart points along a third link, and the wheelchair being pivotally mounted at the outer end of the third link.

4,483,654
WORKPIECE TRANSFER MECHANISM

George R. Koch, Los Altos, and Carl T. Petersen, III, Fremont, both of Calif., assignors to Lam Research Corporation, Fremont, Calif.

Division of Ser. No. 234,307, Feb. 13, 1981, Pat. No. 4,433,951.
This application Dec. 5, 1983, Ser. No. 557,860
Int. Cl.³ B65G *35/00*
U.S. Cl. 414—744 R **4 Claims**



1. A workpiece transfer means comprising:

a support arm secured to be rotatable about an axis located near a first terminal end thereof, whereby a plane of rotation for the support arm is established;

arm drive means for rotating the support arm about said axis located near said first terminal end thereof;

a central gear having a plurality of teeth disposed adjacent to the support arm to have a pitch circle thereof disposed substantially parallel to said plane of rotation for the support arm, said pitch circle also being substantially concentric with said axis about which the support arm is rotatable, the central gear further being rotatable about sid axis about which the support arm is rotatable;

arm position control means for rotating the central gear about said axis about which the support arm is rotatable;

an idler gear having a plurality of teeth secured to the support arm on the same side thereof as the central gear to have said pitch circle of the idler gear disposed substantially parallel to said plane of rotation of the support arm, the idler gear also being secured to be rotatable with respect to the support arm about an axis disposed substantially parallel to said axis about which the support arm is rotatable, said teeth of the idler gear being engaged with said teeth of the central gear;

a workpiece arm shaft secured to a second terminal end of the support arm to be rotatable with respect thereto about an axis substantially parallel to said axis about which the support arm is rotatable;

a workpiece arm drive gear rigidly secured on the same side of the support arm as the central gear to a first terminal end of the workpiece arm shaft, the workpiece arm drive gear being disposed with its pitch circle substantially parallel to said plane of rotation of the support arm and substantially concentric with said longitudinal axis of the workpiece arm shaft, the workpiece arm drive gear being disposed with its teeth engaged with said teeth of the idler gear;

a workpiece arm disposed on the opposite side of the support arm from the central gear and rigidly secured at a first

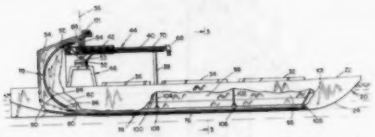
terminal end thereof to a second terminal end of the workpiece arm shaft, a second terminal end of the workpiece arm being adapted to retain a workpiece.

4,483,655

VESSEL LOADING METHOD

Frederick O. Snow, Wayne; Roger L. Hulette, Sparta, both of N.J.; Albert M. Martinson, Jr., Rose Valley, Pa., and Peter Gwyn, Charleston, S.C., assignors to AMCA International Corporation, Hanover, N.H.

Filed Sep. 28, 1982, Ser. No. 426,222
Int. Cl.³ B65G *67/60*
U.S. Cl. 414—786 **8 Claims**



1. A method of loading bulk material from a barge adapted to be propelled by a self-propelled tending vessel for loading such material on an anchorable transport vessel having a cargo hold, the method comprising the steps of:

positioning the transport vessel and the barge adjacent one another, the barge including a slewable boom and shuttle conveyor, the boom having an outboard end which projects only to substantially the side of the barge in any slewed position of the boom;

fixing the position of the barge and the transport vessel relative to one another;

slewing the end of the boom toward the cargo hold of the transport vessel from a storage position in a generally longitudinal alignment with the barge to a position so that the boom length is in substantially longitudinal alignment with a transverse width of the transport vessel;

extending the shuttle conveyor from the boom end from a retracted position that defines radial clearance for allowing slewing and luffing of the boom so that the outboard end of the shuttle conveyor is above the cargo hold of the transport vessel; and

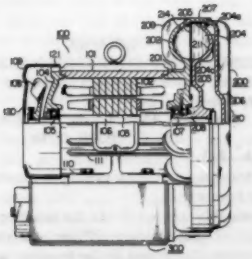
offloading bulk material from the barge to the cargo hold of the transport vessel.

4,483,656

VORTEX BLOWER

Masahiro Abe, Chiba, and Katsuo Motosaka, Narashino, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 20, 1982, Ser. No. 451,092
Claims priority, application Japan, Dec. 18, 1981, 56-203399
Int. Cl.³ F04D *29/34*
U.S. Cl. 415—53 T **13 Claims**



1. A vortex blower comprising:

a rotor shaft having an axis of rotation;

an impeller fixed to said rotor shaft;

an annular recess defined by an inner wall surface formed in said impeller and laterally opening around said rotation axis;

a casing disposed to face said impeller and cover a radially outer portion of said impeller, said casing having a cylindrical peripheral wall;

a suction portion and a discharge port formed in said casing;

an arcuate recess formed around said rotation axis in a portion of said casing which extends between said suction port and said discharge port and opposes said annular recess; and

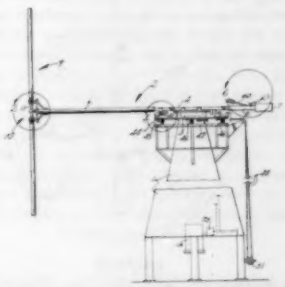
a plurality of blades provided in said annular recess to divide said annular recess into a plurality of circumferentially arranged pockets and each having a radially outer end portion extending towards said arcuate recess beyond an end portion of a radially outer portion of said annular recess, said radially outer end portion of each blade being disposed along an inner wall surface of said peripheral wall of said casing with a small gap therebetween.

4,483,657

WIND TURBINE ROTOR ASSEMBLY

Heinz W. Kaiser, 90130 Prairie Rd., Eugene, Oreg. 97402

Filed Sep. 29, 1982, Ser. No. 427,593
Int. Cl.³ F03D *7/06*
U.S. Cl. 416—51 **11 Claims**



1. A rotor assembly for a vertical axis wind turbine having a motor powering initial rotor assembly movement, said rotor assembly comprising,

a horizontal beam member adapted to be rotatably supported by the turbine,

a blade assembly disposed adjacent one end of said beam member and having an upright blade,

a bearing structure coupling a mid-portion of said blade assembly to the horizontal beam member and permitting blade movement about multiple axes including feathering movement about the blade major axis,

a blade latching mechanism on said beam member including a latch member actuated by centrifugal force and normally maintaining the blade and said beam member in a fixed relationship during rotor assembly travel whereby differential air pressures acting on the blade surfaces will impart lift and hence rotation to the rotor assembly, said latch member inoperable when the rotor assembly is static to permit feathering of the blade into the wind, said latch member responsive to centrifugal force to engage the blade assembly during initial motor driven movement of the rotor assembly during turbine starting,

a latch actuating mechanism biasing said latch member out of engagement with said blade when the rotor assembly is static, said latch actuating mechanism also adapted to disengage the latch member from the blade during opera-

tion of the rotor assembly to prevent a rotor assembly over speed condition,

centrifugally actuated lever means carried by said horizontal beam member and momentarily responsive to centrifugal forces of the magnitude generated at the upper limits of acceptable rotor assembly speed, and

means coupling said centrifugally actuated lever means and said latch actuating mechanism to said latch member to actuate the latter to permit the blade to rotate about its major axis within said bearing means to assume a feathered position in the presence of excessive wind speeds to stop rotor assembly movement.

4,483,658

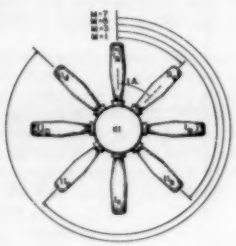
ROTATIONAL WAKE REACTION STEPS FOR FOILS

Elliott M. Levine, 393 Kingston Crescent, Winnipeg, Manitoba, Canada R2M 0T7

Continuation-in-part of Ser. No. 102,398, Dec. 11, 1979, , which is a continuation-in-part of Ser. No. 844,723, Oct. 25, 1977, abandoned, which is a continuation-in-part of Ser. No. 714,387, Aug. 16, 1976, abandoned. This application Mar. 5, 1982, Ser. No. 355,227

Int. Cl.[3] B64C *11/48*

U.S. Cl. 416—130 28 Claims



1. An axial flow foil system acting upon a medium such as air comprising in combination two co-rotating foil stages or discs, an upstream foil stage or disc and a downstream foil stage or disc, each foil stage having an equal number of foils, a common shaft, said shaft axially spacing said foil stages to provide clear and substantial disc separation as a function of the downstream location of the wake generated by the upstream foil at the juncture of the substantially intercepted downstream foil, the foils of each stage including roots, said foil stages being fixedly mounted upon said shaft by said roots for common rotation therewith and with one another and in frontal symmetry, the foils or blades of each individual stage having the same pitch and being substantially symmetrically and substantially equidistantly spaced from one another and from the foils of the adjacent foil stage in substantially uniform wake producing relationship so that the interacting, substantially uniform adjacent foil pressures and the upstream foil wakes beneficially interact optimumly with the foils, not necessarily the nearest adjacent ones, of the downstream foil stage, in which virtually continuous air foils are formed of leading edge upstream foils and their cooperating trailing edge downstream foil partners with the separation between these foils provided by the common shaft, that is the substantially common planform index advance angle (I.A.) in the system together with the clear and substantial disc separation (B") establishes the critical substantially frontal symmetry and the fixed blade root locations upon said shaft.

4,483,659

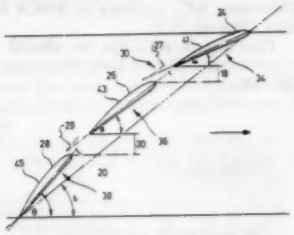
AXIAL FLOW IMPELLER

Richard J. Armstrong, 7 Jackes Ave., Apt. 703, Toronto, Ontario, M4T 1E3, Canada

Filed Sep. 29, 1983, Ser. No. 537,191

Int. Cl.[3] F04D *29/38*

U.S. Cl. 416—200 R 17 Claims



1. An axial flow impeller comprising a rotor, said rotor having a longitudinal axis,

a first plurality of circumferentially equispaced blades secured substantially radially to said rotor for movement in a plane of rotation about said axis, each blade having a leading edge and a trailing edge forming a chord defining an angle to the plane of rotation less than the stall angle of the blade;

a second plurality of circumferentially equispaced blades secured radially to said rotor for movement in a plane of rotation with said first plurality of blades, each blade in said second plurality of blades having a leading edge and a trailing edge froming a chord defining an angle to the plane of rotaton greater than the angle of the blades in the first plurality of blades and less than the stall angle of the blade, each blade in said second plurality of blades axially displaced from a blade in said first plurality of blades up to about one-half of the cord length of a blade in said first plurality of blades and laterally displaced from said blade in said first plurality of blades not less than the chord thickness of the blade in the first plurality of blades below the said blade in the first plurality of blades such that combined airflow from the blade in the first plurality of blades is directed over top of the blade in the second plurality of blades.

4,483,660

SUBMERSIBLE PUMP IMPELLER LOCKING METHOD

Leo L. Roberts, Claremore, Okla., assignor to Hughes Tool Company, Houston, Tex.

Filed May 14, 1982, Ser. No. 378,303

Int. Cl.[3] B32B *31/04*

U.S. Cl. 416—213 A 2 Claims

1. A centrifugal pump, comprising in combination:

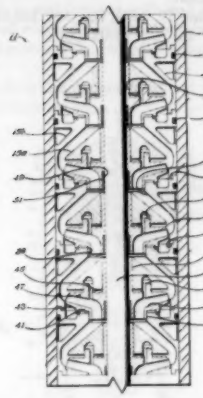
a tubular housing;

a shaft rotatably carried inside the housing;

a plurality of spaced-apart diffusers surrounding the shaft and stationarily carried in the housing; and

a plurality of impellers, each having a bore receiving the shaft and carried between two of the diffusers, the impel-

lers being locked to the shaft by a locking member inserted in the bore of each impeller, the locking member



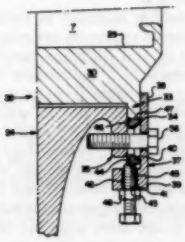
being of a solid elastomeric material that expands when heated and remains expanded and harder after cooling.

4,483,661

BLADE ASSEMBLY FOR A TURBOMACHINE

Gary B. Manharth, Milford, and Jay L. Cornell, Cincinnati, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed May 2, 1983, Ser. No. 490,820
Int. Cl.³ F01D *5/32*
U.S. Cl. 416—220 R **19 Claims**



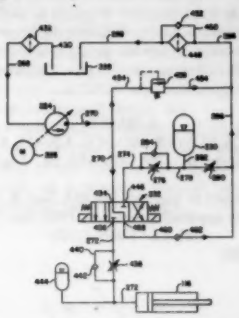
1. For use in turbomachinery of the type including a rotatable disk with at least one slot at its periphery and a blade radially retained to said disk, said blade having a base including a dovetail portion and a hook portion depending therefrom, said slot and said dovetail portion having correspondingly configured surfaces for slidingly retaining said dovetail portion within said slot, and said hook portion extending radially inwardly from an edge of the base of said blade and along lateral portions of said disk, means for reducing relative motion between said blade and said disk comprising retaining means operatively associated with said lateral portions of said disk and adapted to retain said hook means adjacent said lateral portions of said disk, and adjustment means operatively associated with said retaining means and adapted to apply a substantially radially outwardly directed force against said hook means.

4,483,662

METHOD FOR PUMPING A LIQUID FROM A WELL AND APPARATUS FOR USE THEREIN

George E. Stanton, Orient, Ohio, assignor to Strata Corporation, Columbus, Ohio

Continuation-in-part of Ser. No. 200,899, Oct. 27, 1980, Pat. No. 4,406,597, which is a continuation-in-part of Ser. No. 156,780, Jun. 5, 1980, Pat. No. 4,346,620. This application Aug. 11, 1982, Ser. No. 407,311
Int. Cl.³ F04B *47/04*
U.S. Cl. 417—53 **51 Claims**



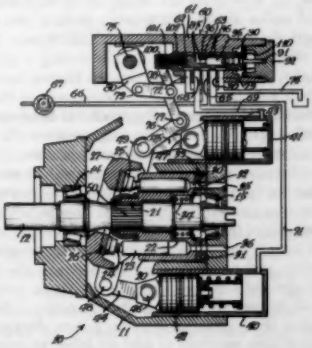
1. In an apparatus for pumping a liquid from a well provided with a sucker rod comprising a pump jack having a hydraulic piston-cylinder combination for lifting said sucker rod through an upward stroke and allowing said sucker rod to descend through a downward stroke, a supply line for supplying hydraulic fluid under pressure to said cylinder, and a pressurized fluid accumulation tank connected in said supply line, the improvement which comprises pre-loading said accumulation tank such that, at the end of said downward stroke of said sucker rod, the gas pressure in said accumulation tank is less than the pressure needed in said cylinder to raise said sucker rod but is such that during said upstroke said accumulation tank never becomes more than about half-full of fluid.

4,483,663

OUTPUT SPEED DROOP COMPENSATING PUMP CONTROL

H. Allen Myers, Ames, Iowa, assignor to Sundstrand Corporation, Rockford, Ill.

Filed Aug. 23, 1982, Ser. No. 410,370
Int. Cl.³ F04B *1/26*
U.S. Cl. 417—222 **12 Claims**



1. A speed droop compensating control for a variable dis-

placement pump connected to a motor in a fluid system, the pump having a swash plate urged in one direction by a hydraulic fluid pressure moment acting through the pistons of the pump and a control cylinder having a control piston connected to said swash plate comprising, a control valve having a set position for maintaining a fluid pressure in said control cylinder to set the position of the swash plate and movable from the set position to adjust the position of the swash plate by connection of the control cylinder to either control pressure or drain, and means responsive to an increase in pressure in the control cylinder responsive to said swash plate being urged in said one direction by said fluid pressure moment to shift said control valve from said set position to connect the control cylinder to control pressure and modify the position of the swash plate to cancel the effect of leakage at a higher system pressure.

4,483,664

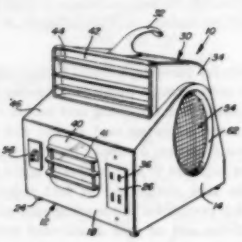
PORTABLE POWER DEVICE, LIGHT AND FAN

Joseph M. Armbruster, 2700 NE. 47th St., Lighthouse Point, Fla. 33064

Continuation-in-part of Ser. No. 214,867, Dec. 9, 1980, Pat. No. 4,424,006. This application Feb. 26, 1982, Ser. No. 352,897

Int. Cl.³ F04B *21/00*

U.S. Cl. 417—234 **4 Claims**



1. A combined portable light, electrical outlet and fan assembly comprising a supporting chassis including a generally vertical front panel and side walls, means supporting the chassis on a support surface, electrical outlet socket means mounted on said front panel, a light mounted on said front panel for directing a light beam forwardly of the assembly, a blower housing mounted on said side walls, a blower mounted in said housing, said blower housing being generally cylindrical in configuration and having a tangential air outlet, a handle attached to said blower housing to enable the assembly to be carried to a desired site of use, an electrical cord for supplying electrical energy to the outlet socket means, light and blower, switch means for selectively actuating the blower and light, said electrical outlet socket means being directly electrically connected with the cord for energization, said blower housing having end walls with each end wall including a generally circular air inlet, and means connecting the blower housing to the side walls of the chassis for pivotal movement of the housing about a horizontal axis generally parallel to the front panel without interference with air entering the air inlets for movement of the air outlet between a horizontal position in which air is directed forwardly of the front panel toward a work area illuminated by the light and a vertical position to enable air to be discharged in a desired direction, said handle being offset from the pivot axis of the blower housing to enable application of rotational torque to the blower housing for pivoting the blower housing, said connecting means between the blower housing and side walls of the chassis including an opening in each side wall defined by an inwardly extending cylindrical flange extending through an air inlet for a short distance, said flanges being closely received in said air inlets to enable the blower housing to rotate about an axis generally at the center of the air inlets.

4,483,665

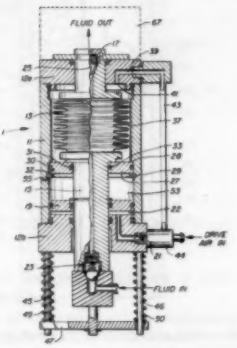
BELLOWS-TYPE PUMP AND METERING SYSTEM

Hugo Hauser, Palo Alto, Calif., assignor to Tritec Industries, Inc., Sunnyvale, Calif.

Filed Jan. 19, 1982, Ser. No. 340,644

Int. Cl.³ F04B *43/10*

U.S. Cl. 417—401 **5 Claims**



1. A system for the metered pumping and dispensing of fluid comprising

a filter means for filtering pumped fluid,

a pump connected to said filter means to pump fluid thereinto, said pump comprising a positive displacement pump of the type which includes a tubular, longitudinally-contractable bellows to receive fluid for pumping; fluid-activated reciprocating means to expand and contract the bellows; means to selectively introduce working fluid to the reciprocating means to actuate the same; a rigid fluid-tight chamber formed to surround the bellows; and means to selectively introduce working fluid into said chamber and to exhaust working fluid therefrom;

a discharge means connected to receive filtered fluid from said filter means; and

a drawback mechanism mounted in communication with said discharge means to prevent dripping of pumped fluid from the outlet of said discharge means, the drawback mechanism comprising a mechanism housing with an aperture leading to an internal cavity within the housing, a first and second chamber formed within said cavity, a first flexible diaphragm sealingly affixed within the housing so as to create a fluid tight boundary between the first and second chamber, a reciprocable member slidingly mounted within the first chamber and in abutment with the first diaphragm, biasing means for holding the reciprocable member in abutment with the first diaphragm, a passage in the housing connecting the second chamber with a source of pressurized working fluid, and a second flexible diaphragm sealingly affixed over said aperture which opens into the first chamber and connected to a distal end of the reciprocable member.

4,483,666

HOSE PUMP FOR MEDICAL USES

Ernst W. Schubert, Lübeck, and Josef Dörfler, Melsungen, both of Fed. Rep. of Germany, assignors to Intermedicat GmbH, Emmenbrucke, Switzerland

Filed Jul. 19, 1983, Ser. No. 515,118

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1982, 3227051

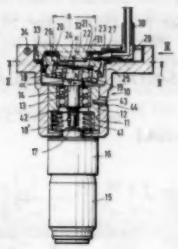
Int. Cl.³ F04B *43/08*

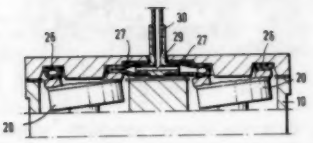
U.S. Cl. 418—45 **21 Claims**

1. In a hose pump for medical uses comprising a housing, a drive shaft mounted in said housing, a shaft piece joined to and

extending obliquely away from said drive shaft, a swash plate mounted on said shaft piece, means for substantially non-rotationally retaining said swash plate relative to said housing, a cover disposed on said housing with said cover having a first end and a second end and an underside which faces said swash plate with said cover in the closed position, the improvement comprising:

means formed on the underside of said cover for receiving an annular hose section;





hinge means connected to said first end of said cover for pivotally mounting said cover to said housing;

locking means located near said second end of said cover for locking said cover to said housing in the closed position; and

means located at said second end of said cover for receiving a hose coupling piece.

4,483,667

VACUUM PUMP AND METHOD OF OPERATING THE SAME

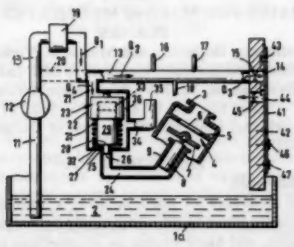
Hanns-Peter Berges; Peter Frieden, and Hans-Peter Kabelitz, all of Cologne, Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed Dec. 16, 1982, Ser. No. 450,423

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1981, 3150033

Int. Cl.³ F01C *21/04*; F04C *27/02, 25/02*

U.S. Cl. 418—84 **14 Claims**



1. A suction nipple arrangement forming a combination with a vacuum pump, said combination comprising:

(a) an oil circuit;

(b) an oil pump coupled to said oil circuit for driving oil therethrough;

(c) a pressure medium conduit having first and second ends; said pressure medium conduit being connected to said oil circuit at said second end;

(d) means forming an inlet opening at said second end;

(e) control means for maintaining closed said inlet opening during run of the vacuum pump and for maintaining open said inlet opening during standstill of the vacuum pump;

(f) a suction nipple valve including a cylinder being in communication with said pressure medium conduit at said first end thereof; a piston slidably received in said cylinder and being displaceable by a pressure medium entering said cylinder upon opening of said inlet opening by said control means; and a movable valve closing member operatively connected to said piston; and

(g) means for maintaining a quantity of oil above said inlet opening in a closed state of said inlet opening whereby upon opening of said inlet opening by said control means initially solely oil is admitted through said inlet opening into said pressure medium conduit.

4,483,668

APPARATUS FOR FORMING MULTI-LAYER PLATE OF LIGNOCELLULOSE-CONTAINING PARTICLES PROVIDED WITH AT LEAST ONE BINDER

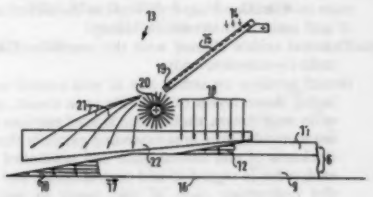
Klaus Poppelreuter, Springe, Fed. Rep. of Germany, assignor to Bison Werke Bahre & Greten GmbH & Co. KG, Springe, Fed. Rep. of Germany

Division of Ser. No. 302,193, Sep. 14, 1981, Pat. No. 4,413,031. This application Jun. 16, 1983, Ser. No. 493,569

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1980, 3034772

Int. Cl.³ B29D *7/00*

U.S. Cl. 425—81.1 **4 Claims**



1. Apparatus for making a plate having several layers of a pressed fleece having two outer cover layers of preferably lignocellulose-containing slender oriented particles mixed with at least one binder material, comprising: respective cover layer strewing station for two outer cover layers; orientation means arranged therebelow, and a station for pressing the fleece; each said cover layer strewing station having an inclined screen with a throwing roller at the lower end thereof for the formation of the region homogeneous relative to particle length and size and a region of the cover layer facing away from the center layer, wherein the length of the slender particles increases with the distance from the center layer, longest particles being subjected to the strongest propulsion when scattered by said throwing roller so that the longest particles travel the greatest distance.

4,483,669

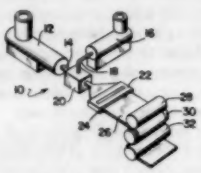
MULTIPLE-LAYERED SHEETING APPARATUS

Granville J. Hahn; Raleigh N. Rutledge, and Jackie D. Murley, all of Big Spring, Tex., assignors to Cosden Technology, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 408,105, Aug. 16, 1982, Pat. No. 4,443,397. This application Apr. 15, 1983, Ser. No. 485,141

Int. Cl.³ B29F 3/04

U.S. Cl. 425—131.1 11 Claims



1. A co-extrusion apparatus for the production of multi-layered products of thermoplastic synthetic resins having selected numbers of layers, comprising:

a main extruder for producing a main heat-plastified resin stream;

at least one co-extruder for producing a side heat-plastified resin stream;

a co-extrusion feedblock, positioned downstream of said extruder and said co-extruder, comprising:

a main co-extrusion body having a central orifice providing for the passage therethrough of a base layer of said main resin stream;

at least one conduit means within said co-extrusion feedblock for receiving said side heat-plastified resin stream from said co-extruder, for splitting said side resin stream into two sub-streams and for transporting said sub-streams through said feedblock, said conduit means comprising a vertical shaft which divides into two horizontally projecting sub-conduits parallel to one another, said two sub-conduits being engaged by adjustment means which control the level of flow of said sub-streams, said adjustment means being internal to said co-extrusion feedblock and comprising means for external adjustment thereof;

at least one slotted plate positioned on either side of said main co-extrusion body transverse to the direction of flow of said main resin stream, including:

a central orifice aligned with the central orifice of said main co-extrusion body,

slotted portions on either side of said central orifice for laying down layers of said side resin stream upon said main resin stream, each of said slotted portions comprising a circular bore area extending partially through the thickness of said slotted plate and positioned opposite each other in regard to said central orifice and having a slot connecting each of said bores to said orifice, wherein each of said bore areas operatively engages said conduit means of said main co-extrusion body to provide for the passage of said substreams from said main co-extrusion body into said bore areas and along said slots to be applied to said main resin stream to form a combined stream, and

valve means for internally controlling the flow of each of said sub-streams by means external of said valve plate comprising two circular camsert cavities extending partially through the thickness of said plate, said cavities being positioned opposite each other in regard to said central orifice and opening into said slotted portions extending longitudinally from said central orifice and each cavity housing an adjustable camsert which is movable within said cavity and, upon adjustment, extends into said slotted portion to control the flow of resin flow, and

a sheeting die downstream of said co-extrusion block for receiving said combined stream and for forming the multi-layered product into a multi-layered sheet.

4,483,670

METHOD AND APPARATUS FOR MOLDING BENT PIPES MADE UP OF COMPOSITE MATERIAL

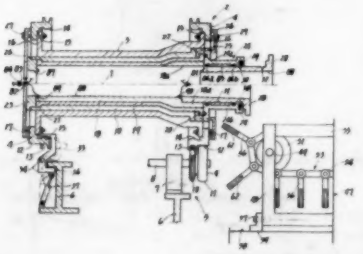
Masahiko Yamamoto, Nishinomiya; Yoshinori Nishino, Takada; Akio Komura, and Tomio Ebisu, both of Osaka, all of Japan, assignors to Hitachi Shipbuilding & Engineering Co., Osaka, Japan

Division of Ser. No. 254,051, Apr. 14, 1981,. This application Sep. 24, 1982, Ser. No. 422,560

Claims priority, application Japan, Jul. 1, 1980, 55-093285; Jul. 2, 1980, 55-093768; Jul. 14, 1980, 55-096498; Aug. 19, 1980, 55-114357

Int. Cl.³ B29C 5/04

U.S. Cl. 425—324.1 13 Claims



1. An apparatus for manufacturing bent pipes made up of a composite material comprising:

a substantially cylindrical resilient molding tool adapted to be deformed between a straight-axis profile and a bent-axis profile,

rotation means for rotating said molding tool about a horizontal axis while holding it axially straight, and

means for bending said molding tool after it is removed from said rotating means,

wherein said bending means comprises a plurality of support means adapted to support said molding tool and axially spaced apart along said molding tool, a corresponding number of cam means operatively associated with said support means, and means for actuating said cam means in a manner such that said molding tool is initially held horizontally straight on said support means but is subsequently bent gradually by said support means.

4,483,671

APPARATUS FOR MAKING MULTILAYER POWDER BLANKS

Alfred Hoffmann, Bilthoven, and Martin B. Verburgh, Amersfoort, both of Netherlands, assignors to SKF Industrial Trading & Development Co. B.V., Nieuwegein, Netherlands

Filed Sep. 15, 1978, Ser. No. 942,757

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1977, 2742254

Int. Cl.³ B28B 1/20

U.S. Cl. 425—435 5 Claims

1. In an apparatus for manufacturing a multilayer annular-shaped powder blank to be subsequently compressed, sintered and extruded, said blank having an intermediate core part and outer and inner layers which are fused into outer and inner, water-tight circumferential coatings respectively, the improvement comprising:

(a) a base,

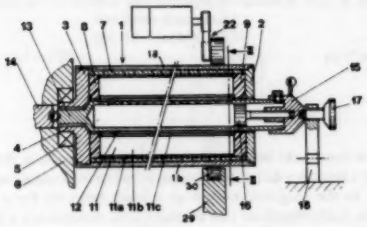
(b) a hollow container comprising cylindrical side walls and

opposite first and second end walls defining an inner space, and a central axis,

(c) means for supporting said container on said base and for rotating said container about said central axis,

(d) an annular-shaped elastic liner removably mounted in said container adjacent said cylindrical side and end walls thereof, said liner having a permanent annular shape whose side walls are continuous and define in cross-section a continuous periphery surrounding a hollow space, and

(e) powder distribution means loadable with a first powder and positionable within said liner's hollow space within said container's inner space for distributing said first powder radially outward, while said container is rotating, onto said liner, thereby forming said outer layer of said blank, which layer remains generally stable on said liner due to centrifugal forces acting thereon, and for similarly and



successively distributing second and third powders, thereby forming said intermediate part and said inner layer respectively of said blank, said liner and included layers of powder being removable from said container for subsequent isostatic compression and sintering of said combined layers and fusion of said inner and outer layers into said water-tight coatings, said powder distribution means further comprising a tube having a longitudinal axis, a row of apertures disposed generally axially along and extending through a wall of the tube, and guide means for inserting said tube generally axially through one end and into the inner space of said container and for rotating said tube about its own axis until said apertures are directed generally downward, whereby said powder may fall downward onto said rotating container and liner forming each of said annular layers thereon, said guide means also providing for axial removal of said tube while said container and liner are rotating.

4,483,672

GAS BURNER CONTROL SYSTEM

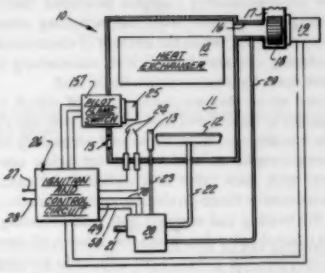
Elmer E. Wallace, Fort Wayne, and Jesse H. Turner, Auburn, both of Ind., assignors to Essex Group, Inc., Fort Wayne, Ind.

Filed Jan. 19, 1983, Ser. No. 459,279
Int. Cl.³ F23N *3/00*
U.S. Cl. 431—20 **6 Claims**

1. In gas fired apparatus having a combustion chamber with a gas burner and an exhaust vent, an exhaust blower connected to the vent for drawing ambient air into the combustion chamber and for discharging air and combustion products from the combustion chamber to the atmosphere, and gas supply control apparatus having a housing with an outlet connected to the burner and a diaphragm operated main valve connected between the outlet and an inlet to control the flow of gas from a source to the burner, the control apparatus having bleed path means for effecting operation of the main valve and a servo pressure regulator valve connected in the bleed path means responsive to outlet pressure from the main valve for effecting regulating movement of the main valve to maintain a substantially uniform gas pressure at the outlet; the improvement comprising:

biased closed bleed valve means fluidly connected in series with said servo pressure regulator valve in the bleed path means of said control apparatus and movable between open and closed positions to effect control of said main valve in an on-off manner independently of said servo pressure regulator valve;

a pneumatic actuator having an expansible chamber in fluid communication with said exhaust vent and subject to fluid pressure in said exhaust vent; and



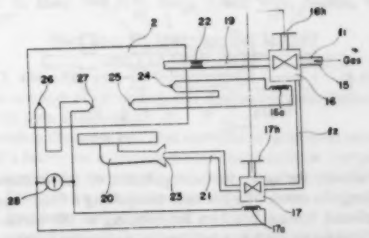
said expansible chamber being operatively connected to said bleed valve means for moving the same between open and closed positions; said expansible chamber effecting the opening of said bleed valve means when the fluid pressure in said exhaust vent drops below a first predetermined subatmospheric pressure level and effecting the closing of said bleed valve means when the fluid pressure in said exhaust vent rises above said first pressure level to a second predetermined subatmospheric pressure level which is greater than said first pressure level.

4,483,673

CATALYTIC COMBUSTION ARRANGEMENT

Eiji Murai, Kashihara; Tomiji Suzuki, Nara; Hiroki Sadamori, Kashihara, and Kazuhito Taguchi, Yamatokoriyama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma and Osaka Gas Company, Ltd., Osaka, both of, Japan

Filed Mar. 7, 1983, Ser. No. 472,475
Int. Cl.³ F23D *13/12*
U.S. Cl. 431—328 **3 Claims**



1. A catalytic combustion arrangement which comprises:

a catalytic mat layer having a catlytic mat which supports a catalyst;

a casing having said catalytic mat layer mounted therein;

means for supplying a fuel into said casing;

a safety valve in said fuel supplying means for controlling the flow of fuel and having an electromotive actuating means;

a preheating burner directed at said catalytic mat for heating said catalytic mat;

means connected to said preheating burner for feeding fuel to said preheating burner;

a control valve in said fuel feeding means for controlling the flow of fuel and having an electromotive actuating means;

a first set of thermo-couples, one of which is disposed adjacent to the edge of said catalytic mat and the other of which is disposed adjacent to said preheating burner, said thermo-couples in said first set being connected in series with each other in a direction for adding the electromotive force-producing currents produced therein by the heating and coupled with said actuating means of said safety valve for, when the amount of electromotive force-producing currents is sufficient, maintaining said safety valve open by electromotive force; and

a second set of thermo-couples, one of which is disposed adjacent to the edge of said catalytic mat and the other of which is disposed adjacent to said preheating burner, said thermo-couples in said second set being connected in series with each other in a direction for cancelling the electromotive force-producing currents produced therein by the heating and coupled with said actuating means of said control valve for, when the amount of electromotive force-producing currents is sufficient, maintaining said control valve open only by electromotive force.

4,483,674

DEVICE FOR ORTHODONTIC TOOTH REGULATION

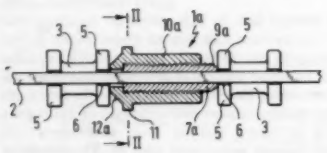
Winfried Schütz, Ravensburger Ring 63, 8000 München 60, Fed. Rep. of Germany

Filed Apr. 26, 1983, Ser. No. 488,703

Claims priority, application Fed. Rep. of Germany, May 7, 1982, 3217243; May 28, 1982, 3220240

Int. Cl.³ A61C *3/00*

U.S. Cl. 433—22 11 Claims



1. A device for orthodontic regulation of the position of teeth along the curve of a jawbone comprising a fixed regulating appliance having brackets for bonding to the surface of each of said teeth, each bracket having a rectangular opening, a relatively rigid rectangular regulating archwire fixed at each end to a said bracket while being slidably guided in the openings of other said brackets, and an elongate force element supported on the regulating archwire between two of said brackets and disposed to transmit moving forces on the teeth to be regulated, the force element consisting of mating screw elements to provide adjustment of its length, the force element being fixed at its ends to two different brackets, so that by adjusting the length of the force element the teeth will be guided under control along the archwire into a desired position along said curve of said jawbone.

4,483,675

PRODUCTION OF TUBES FOR DENTAL IMPRESSIONS

Kenneth H. Marshall, 85 The Bulwark, Castlecrag, Australia 2068

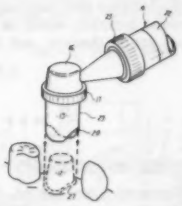
PCT No. PCT/AU82/00068, § 371 Date Dec. 22, 1982, § 102(e) Date Dec. 22, 1982, PCT Pub. No. WO82/03762, PCT Pub. Date Nov. 11, 1982

PCT Filed May 7, 1982, Ser. No. 459,635

Claims priority, application Australia, May 7, 1981, PE8751; Mar. 12, 1982, PF3090

Int. Cl.³ A61C *3/00*

U.S. Cl. 433—141 5 Claims



1. A hand-held instrument for assisting a dentist in the scribing of a line on a dental impression tube corresponding substantially to the gingival margin at a tooth reduced for a jacket crown, bridgework or like construction, comprising a handle, a distal extension on said handle, a spindle located on said extension and disposed normally thereto, and a head member supported on said spindle, said head member being rotatable with respect to said extension, said head member mounting a sprung tracing pin and a stylus spaced therefrom to enable the dentist to trace said gingival margin with said tracing pin while simultaneously scribing a corresponding line on said dental impression tube.

4,483,676

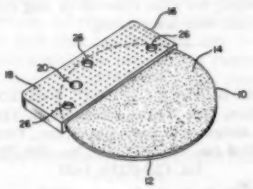
INTERPROXIMAL DENTAL INSTRUMENT

Robert B. Thierman, P.O. Box 03371, Portland, Oreg. 97203

Filed Mar. 3, 1983, Ser. No. 471,764

Int. Cl.³ A61C *3/06*

U.S. Cl. 433—142 3 Claims



1. An interproximal dental instrument comprising

a disc of semi-rigid metal having side surfaces and a rounded working edge at one end,

one of said side surfaces of said disc being roughened to provide an abrasive area,

said disc having a thickness of approximately five thousandths inch allowing it to be forced into the contact areas between teeth for smoothening such areas and also allowing the working edge to remove excess bonding material in proximal areas of the teeth,

and a grip member secured on said disc on the end opposite from said working edge,

said grip having roughened side surfaces to provide a friction grip thereon between the fingers,

the rigidity of said disc being such that it can be forced edgewise through the contact areas of the teeth but at the same time said disc can bend slightly to move past obstructions on the teeth.

4,483,677

FLEXIBLE CLASP FOR A REMOVABLE PARTIAL DENTAL PROSTHESIS AND METHOD OF FORMATION OF A COMBINED FLEXIBLE CLASP AND STRESS RELIEVING PROSTHESIS

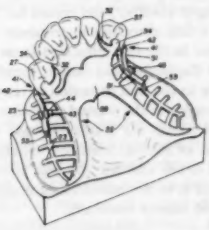
Leonard J. Kulwiec, 2103 Lark Glen, Excondido, Calif. 92026, and Michael F. X. Kulwiec, 816 Piner Rd., Santa Rosa, Calif. 95401

Continuation-in-part of Ser. No. 303,560, Sep. 18, 1981, Pat. No. 4,412,824. This application Aug. 10, 1983, Ser. No. 521,699

The portion of the term of this patent subsequent to Nov. 1, 2000, has been disclaimed.

Int. Cl.³ A61C *13/28*

U.S. Cl. 433—170 **10 Claims**



1. A flexible clasp for removable mounting of a partial dental prosthesis to an abutment tooth, said clasp being coupled to said prosthesis and including retention means formed to engage and extend around at least a portion of the side of said abutment tooth to retain said prosthesis in an edentulous space proximate said abutment tooth, said retention means being further formed to be resiliently laterally displaceable with respect to said side of said abutment tooth during mounting of said prosthesis to and removal from said edentulous space, wherein the improvement in said clasp is comprised of:

said retention means being formed as an arm coupled to said prosthesis at a location in said edentulous space at least about one tooth width from said abutment tooth, said arm being cantilever supported from said prosthesis at said location and extending therefrom and being free for unconstructed lateral flexure between said location and said side of said tooth to provide for resilient lateral displacement in said clasp.

4,483,678

DENTAL IMPLANT FOR ATTACHMENT OF ARTIFICIAL TOOTH

Shinji Nishio, and Kazuo Kondo, both of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

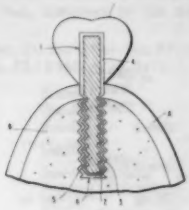
Filed Jul. 7, 1983, Ser. No. 511,686

Claims priority, application Japan, Jul. 12, 1982, 57-120800

Int. Cl.³ A61C *13/08*

U.S. Cl. 433—201 **9 Claims**

1. A dental implant for the attachment of an artificial tooth, comprising a root portion to be embedded in bone and a top portion to be projected in the mouth from the tooth mucosa, wherein the root portion comprises a high strength metal substrate, a ceramic or glass coating layer on the metal substrate, and a calcium phosphate coating layer on the ceramic or glass coating layer.



4,483,679

COMPOUNDED THERMOPLASTICIZED ISOPRENE POLYMER RESIN FOR FILLING A DENTAL ROOT CANAL, AND METHOD OF MAKING SAME

Mutsuo Fujisawa, Musashino; Mitsuru Otani; Haruhiro Ohtsu, both of Tokyo, and Tsutomu Kameda, Morioka, all of Japan, assignors to Toyo Chemical Laboratories, Inc., Tokyo, Japan

Filed Nov. 30, 1982, Ser. No. 445,579

Claims priority, application Japan, Jan. 21, 1982, 57-7774

Int. Cl.³ A61K *6/08*

U.S. Cl. 433—228 **9 Claims**

1. In a dental thermoplasticized resin composition for root canal filling which is filled by means of a syringe, the improvement comprises, as said thermoplasticized resin composition a mixture having a softening point of 40°–60° C. and consisting of:

(a) gutta percha or a mixture of balata and isoprene polymer, and

(b) compounding materials consisting of paraffin wax, Japan wax, bees wax, zinc oxide, zinc sulfide and barium sulfate.

4,483,680

GENEALOGICAL INFORMATION RECORDING AND ARRANGEMENT METHOD AND APPARATUS

Louise A. Daly, 944 NW. Innis Arden Way, Seattle, Wash. 98177

Filed Dec. 12, 1983, Ser. No. 560,737

Int. Cl.³ G09B *29/00*

U.S. Cl. 434—154 **8 Claims**

1. A method of recording and displaying genealogical and pedigree data comprising

recording the name and vital statistics of individual members of a family on a discrete pattern imprinted on transparent material, the pattern selected from the group consisting of:

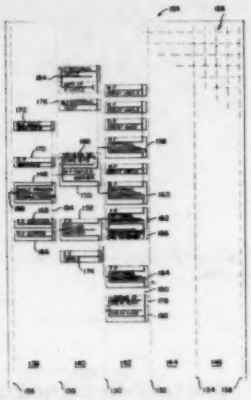
a first pattern for recording parental pairs of direct descendants and ancestors,

a second pattern for recording individual collateral relations,

a third pattern for recording individual mates of the group consisting of male mates of collateral line female relations and additional mates of direct male descendants and ancestors, the pattern so configured as to overlap relationally with said first and second patterns, and

a fourth pattern for recording individual mates of the group consisting of female mates of collateral line male relations and additional mates of direct female descendants and ancestors, the pattern so configured as to

overlap relationally with said first and second patterns; and



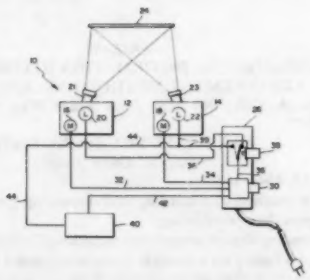
placing said patterns in interconnecting lineal relationships so as to display the genealogical and pedigree relations of said family.

4,483,681

METHOD AND APPARATUS FOR DETERMINING VIEWER RESPONSE TO VISUAL STIMULI

Lee S. Weinblatt, 797 Winthrop Ave., Teaneck, N.J. 07666

Filed Feb. 7, 1983, Ser. No. 464,760
Int. Cl.³ G09B *5/02*
U.S. Cl. 434—236 **10 Claims**



1. A method for determining viewer response to visual stimuli comprising the steps of

(a) presenting programmed visual stimuli in a viewing mode having a sequential display of images for simulating a realistic environment as experienced by the viewer including a corresponding display of images in an alternate viewing mode,

(b) providing viewer selection control for activating the alternate viewing mode, and

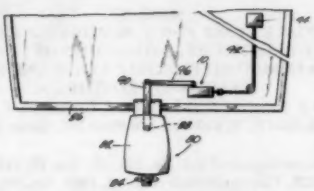
(c) registering selection control of the alternate viewing mode as a measure of viewer response to the visual stimuli.

4,483,682

LINEAR POWER ASSIST MECHANISM

David T. Cavil, Menomonee Falls, and William R. Krueger, West Allis, both of Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Oct. 12, 1982, Ser. No. 433,629
Int. Cl.³ B63H *21/26*
U.S. Cl. 440—53 **13 Claims**



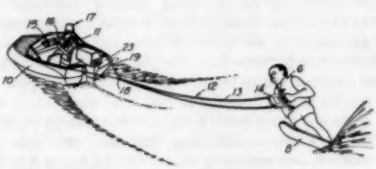
8. A linear power assist mechanism comprising a drum mounted for rotation about a stationary axis, means for rotating said drum in one direction, an input member mounted for movement relative to a non-driving position, a movably mounted output member, and means for displacing said output member in a first direction in response to movement of said input member in the first direction from the non-driving position and for displacing said output member in a second direction opposite to the first direction in response to movement of the input member in the second direction from the non-driving position said means for displacing said output member comprising a pair of flexible members wound in opposite relation around said drum and for slippage therebetween when said input member is in the non-driving position and connected to said input and output members.

4,483,683

SKI TOW SIGNAL ASSEMBLY

Ronald S. Alley, Sr., 200 Patricia La., Fayetteville, Ga. 30214

Filed Aug. 6, 1982, Ser. No. 405,941
Int. Cl.³ A63C *15/06*
U.S. Cl. 441—69 **13 Claims**



1. A ski rope handle assembly comprising:

(a) a handle having a body by which the handle may be secured to a ski rope and a gripping bar which is to be grasped by a skier, said body being forwardly of and spaced from said gripping bar, said handle also including arms extending between the ends of said gripping bar and said body, said body and said arms and said gripping bar defining an opening through which the fingers of the skier may be inserted;

(b) a wireless radio signal transmitter encased within said handle, for transmitting signals from said transmitter;

(c) control means on said handle, electrically connected to said transmitter for controlling the actuation of said transmitter for producing said signals, said control means including an on/off switch electrically connected to said transmitter for turning said transmitter on and off; and

(d) a battery encased within said handle and electrically connected to said transmitter for providing a source of power for said transmitter, said transmitter and said bat-

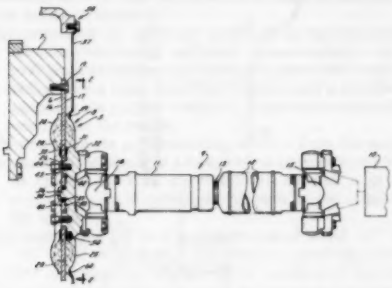
tery being within said body, said electrical connection extending through one of said arms.

4,483,684

TORSIONAL IMPULSE DAMPER FOR DIRECT CONNECTION TO UNIVERSAL JOINT DRIVE SHAFT

James B. Black, Roscoe, Ill., assignor to Twin Disc, Inc., Racine, Wis.

Filed Aug. 25, 1983, Ser. No. 526,334
Int. Cl.³ F16D 3/14
U.S. Cl. 464—68 6 Claims



1. A torsional impulse damper having a driving member connectable with an engine flywheel for coaxial rotation therewith and having a coaxial driven member that is confined to limited rotation relative to the driving member and is connectable with a universal joint at one end of a drive shaft that has its other end connected with a driven mechanism, said damper further having spring means and friction means reacting between said driving and driven members to yieldingly retard relative rotation between them and thus prevent imposition upon the driven mechanism of abrupt changes in rotational speed of the flywheel, said damper being characterized by:

A. said driving member comprising a disc-like plate having an axis and having axially opposite substantially flat faces, and further having

(1) a plurality of holes through it that are spaced from its said axis and from one another, and

(2) means on its peripheral portion providing for its coaxial securement to a flywheel;

B. said driven member comprising

(1) a pair of carrier elements, each having an axis, one adjacent to each said face of the driving member, each having an axially inner side that opposes its adjacent face of the driving member and an opposite axially outer side, and

(2) securement means extending through said holes in the driving member and connecting said carrier elements in fixed relation to one another with their axes coinciding;

C. means on said outer side of one of said carrier elements for coaxial securement of a universal joint thereto;

D. means rotatably confining said driving and driven members against radial displacement out of coaxial relationship to one another, comprising

(1) a coaxial trunnion on one of said members, and

(2) a coaxial bearing on the other of said members in which said trunnion is rotatably received; and

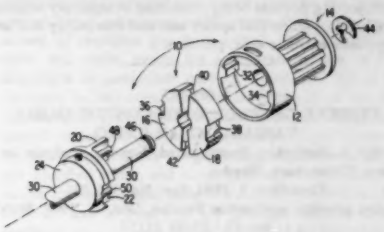
E. said friction means being on the inner side of at least one of said carrier elements and defining a friction area thereon which engages the adjacent face of the driving member to frictionally retard relative rotation between said carrier element and the driving member and to resist tilting of the axes of the carrier elements out of coincidence with the axis of the driving member.

4,483,685

MOTOR ISOLATOR PULLEY

Anthony D. Spasiano, Old Greenwich, Conn., and Vaclav Jelinek, River Edge, N.J., assignors to The Singer Company, Stamford, Conn.

Filed Mar. 21, 1983, Ser. No. 477,115
Int. Cl.³ F16D 3/10, 3/70
U.S. Cl. 464—83 6 Claims



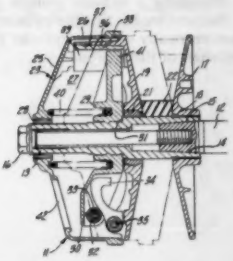
1. A drive coupling including a rotatable cup with inwardly projecting fixed portions, a rotatable hub including stiff fixed tangs which project into the cup where they extend between the inwardly projecting fixed portions of the cup, and a plurality of identical non-metallic resiliently compressible bumpers which extend between said fixed hub tangs and inwardly projecting cup portions, and which constitute the only drive connection between the hub and cup for the transmission of torque therebetween, the tangs being formed with raised portions which alone engage the bumpers whenever less than a predetermined driving torque is applied to the coupling, and with other portions which engage the bumpers when said predetermined torque is exceeded to thereupon significantly increase the area of engagement between the tangs and bumpers and change the spring constant of the bumpers.

4,483,686

V-BELT AUTOMATIC TRANSMISSION

Takashi Kobayashi, Hamamatsu, and Nobuo Wakano, Iwata, both of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Japan

Filed Aug. 19, 1983, Ser. No. 524,916
Int. Cl.³ F16H 11/06
U.S. Cl. 474—11 9 Claims



1. In a V-belt automatic transmission comprising a shaft, a pair of spaced pulley halves one of which is axially affixed to said shaft and the other of which is axially movable relative to said shaft, said pulley halves being adapted to receive a V-belt therebetween, a cap fixed to one of said pulley halves on the side opposite the other of said pulley halves and defining with said one pulley half an internal cavity, a spider member rotatably coupled with said shaft and contained within said cavity, said spider member and said one pulley half being supported

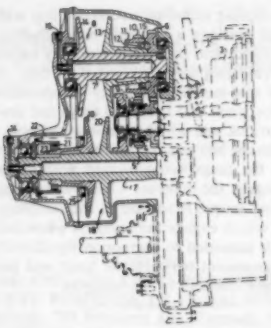
for axial movement relative to each other, and speed responsive means for effecting relative axial movement between said spider member and said one pulley half and for applying said relative axial movement into axial movement of the axially movable pulley half in response to the speed of said shaft, the improvement comprising said cap having at least one opening formed therein sized to pass a projecting portion of said spider member when said spider member and said one pulley half are in an extreme axial position for cooling of said transmission, said projecting portion being contained completely within the internal cavity when said spider and said one pulley half are in the opposite extreme axial position.

4,483,687

VEHICLE GEARBOX WITH CONTINUOUSLY VARIABLE GEAR RATIO

Heinrich A. Schlicker, Stenungsund, Sweden, assignor to AB Volvo, Gothenburg, Sweden

Filed Dec. 1, 1981, Ser. No. 326,396
Claims priority, application Sweden, Dec. 12, 1980, 8008771
Int. Cl.³ F16H *55/52*
U.S. Cl. 474—28 **5 Claims**



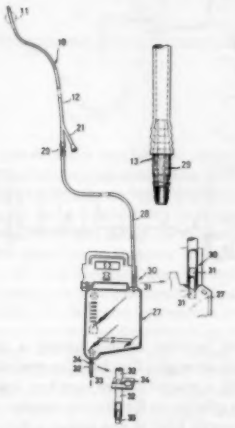
1. Gearbox, especially for motor vehicles, which has an input shaft and carries belt pulleys on a driving and a driven shaft respectively, between which pulleys torque is transmitted by means of an endless, flexible member, and which pulleys consist of a pair of pulley members on each said shaft with variable spacing between to vary the transmission ratio between the driving and the driven shaft, said driving shaft having a fluid cylinder arranged concentrically with and joined to said shaft, and containing a slidable plunger joined to one pulley member, characterized in that the cylinder is joined to a gear arranged concentrically with the cylinder and engaging a gear on the input shaft of the gearbox.

4,483,688

CATHETER

Hiroshi Akiyama, 2-5-12, Honkomagome, Bunkyo-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 189,244, Sep. 22, 1980, abandoned, which is a continuation-in-part of Ser. No. 923,440, Jul. 10, 1978, abandoned, which is a continuation-in-part of Ser. No. 740,285, Nov. 9, 1976, abandoned. This application Feb. 28, 1983, Ser. No. 470,690
Int. Cl.³ A61M *25/00*
U.S. Cl. 604—265 **15 Claims**



1. A catheter and drainage system for draining urine from a body cavity comprising, in combination, an indwelling catheter, said catheter comprising a flexible tubular member having a main lumen for urine discharge, one end of said main lumen being closed, said tubular member having an aperture adjacent to said one end to allow communication between said main lumen and the exterior of said tubular member, a balloon provided adjacent said aperture, an auxiliary lumen connected to said main lumen for inflating said balloon, and an oligodynamically active metal deposited on a portion of only the outside periphery of said tubular member for producing metal ions upon contact with the urine; a draining tube, a connector means connecting said main lumen to said drainage tube, said connector means having an oligodynamically active metal providing a barrier against intrusion of ambient organisms into said drainage tube, a urine collecting bag having an inlet, and a tubular sterilizing means having oligodynamic activity connecting said drainage tube to said inlet of said collecting bag.

4,483,689

ABRASION-RESISTANT DURABLE-PRESS ACRYLIC FINISHES FOR COTTON TEXTILES BY USE OF NONOXIDATIVE POLYMERIZATION INITIATORS AND ACCELERATORS IN TWO-STAGE HEAT CURING

Clark M. Welch, New Orleans, La., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jul. 29, 1983, Ser. No. 518,779
Int. Cl.[3] D06M *15/54, 15/64, 15/60*
U.S. Cl. 8—184 11 Claims

1. A process for imparting to cellulosic textiles a high level of wrinkle resistance, smooth drying properties and abrasion resistance, without high strength loss or marked discoloration in the textile, comprising:

(a) immersing the cellulosic textile in an aqueous treating solution containing sufficient concentrations of: N-methylolacrylamide, 4,4'-azobis(4-cyanovaleric acid) solubilized by a base, a buffered catalyst and a crosslinking agent for the polymerization of N-methylolacrylamide to impregnate the textile;

(b) removing the excess treating solution from the textile;

(c) heating the textile at a temperature of from about 95° C. to 130° C. for from about ¼ to 10 minutes to dry and polymerize the N-methylolacrylamide in the cellulose of the textile;

(d) heating the textile at a temperature of about 145° C. to 180° C. for from about ¼ to 6 minutes to graft the polymerized N-methylolacrylamide to the cellulose of the textile;

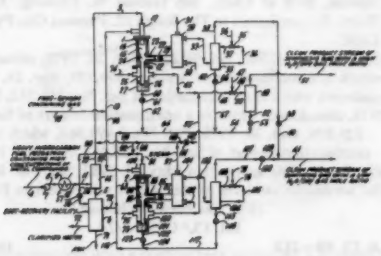
(e) washing the textile with water to remove excess reagents.

4,483,690

APPARATUS FOR PRODUCTION OF SYNTHESIS GAS FROM HEAVY HYDROCARBON FUELS CONTAINING HIGH METAL CONCENTRATIONS

Charles P. Marion, Mamaroneck, and Frederick C. Jahnke, Rye, both of N.Y., assignors to Texaco Development Corporation, White Plains, N.Y.

Continuation of Ser. No. 385,742, Jun. 7, 1982, Pat. No. 4,411,670. This application Sep. 19, 1983, Ser. No. 533,672
Int. Cl.[3] C10J *3/48*
U.S. Cl. 48—61 1 Claim



1. Apparatus for simultaneously producing two clean product streams of synthesis gas having high and low H_2O/dry gas mole ratios, respectively, comprising:

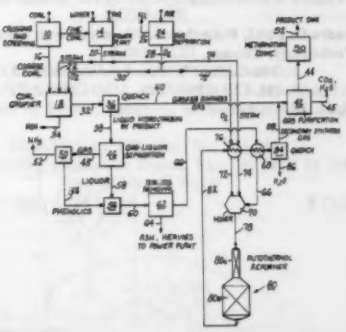
at least one free-flow partial oxidation gas generator with a refractory lined reaction zone with means from which all of the hot raw effluent gas is discharged into a quench tank containing water for quench cooling and scrubbing, at least one other free-flow partial oxidation gas generator with a refractory lined reaction zone and a gas-diversion means for splitting the hot raw effluent gas stream into two split streams, and a convection-type gas cooler connected to said gas-diversion means for cooling one split stream of the hot raw effluent gas stream, a gas scrubber and gas-liquid separating means for receiving partially cooled synthesis gas streams from said convection-type gas cooler and providing a clean product stream of synthesis gas with a low H_2O/dry gas mole ratio; and, flow control means for controlling the introduction of all of the hot raw synthesis gas produced by said at least one gas generator into its associated quench tank, and controlling the introduction of one of said split, hot raw synthesis gas streams produced by said at least one other gas generator into its associated quench tank, while simultaneously introducing the remaining split hot raw synthesis gas stream into the gas cooler; a gas scrubber and gas-liquid separating means connected for receiving all of the partially cleaned quenched streams of synthesis gas from said quench tanks, providing outlet means for a clean product stream of synthesis gas with a high H_2O/dry gas mole ratio, and outlet means for a separate stream of liquid dispersion of particulate carbon, water, and ash; a soot-recovery facility connected for receiving all of the liquid dispersion of particulate carbon, water and ash from the quench tanks and gas scrubber and gas-liquid separation means having outlets for providing separate streams of ash, clarified water, and liquid dispersion of soot; conduit means connecting said outlet for a liquid dispersion of soot and said and at least one gas generator whose hot raw synthesis gas stream is totally quenched for introducing a reactant fuel feedstream comprising a mixture of heavy hydrocarbon fuel feedstock containing high concentrations of metal compounds in admixture with the liquid dispersion of soot, a free-oxygen containing gas, and a temperature moderator; and conduit means connected to the remaining gas generating means for simultaneously introducing a reactant fuel feedstream comprising a mixture of heavy hydrocarbon fuel feedstock containing high concentrations of metal compounds, a free-oxygen containing gas, and a temperature moderator.

4,483,691

PRODUCTION OF SYNTHETIC NATURAL GAS FROM COAL GASIFICATION LIQUID BY-PRODUCTS

William T. McShea, III, Martinsville, and Robert M. Yarrington, Westfield, both of N.J., assignors to Engelhard Corporation, Iselin, N.J.

Continuation of Ser. No. 430,200, Sep. 30, 1982, abandoned. This application Feb. 13, 1984, Ser. No. 579,842
Int. Cl.[3] C10J *3/16;* C10K *3/02;* C01B *3/40*
U.S. Cl. 48—202 31 Claims



1. In a coal gasification process in which coal is reacted with steam and oxygen to produce (i) a gasifier synthesis gas which is methanated to produce a synthetic natural gas, and (ii) a liquid hydrocarbon by-product, the improvement comprising preparing a secondary synthesis gas from said liquid hydrocarbon by-product and methanating the secondary synthesis gas, by the steps of:

(a) preheating an inlet stream comprising said liquid hydrocarbon by-product, H_2O, and oxygen to a preheat temperature at least sufficiently high to initiate catalytic oxida-

tion of said hydrocarbon by-product as defined below, but less than about 1200° F. (649° C.);

(b) introducing the preheated inlet stream into a first catalyst zone comprising a monolithic body having a plurality of gas flow passages extending therethrough and having a catalytically effective amount of a platinum and palladium catalytic component dispersed therein, the amounts of hydrocarbon by-product, H_2O and oxygen introduced into said first catalyst zone being controlled to maintain an H_2O to C ratio of from about 0.5 to 5 and an O_2 to C ratio of from about 0.15 to 0.4 in said inlet stream;

(c) contacting the preheated inlet stream within said first catalyst zone with said platinum and palladium catalytic component to initiate and sustain therein catalytic oxidation of a quantity, less than all, of said hydrocarbon by-product sufficient to attain a temperature within said first catalyst zone at least high enough to crack substantially all unoxidized C_3 or heavier hydrocarbons in said by-product to C_1 to C_4 hydrocarbons, the temperature of at least a portion of said monolith being at least about 250° F. (139° C.) greater than the ignition temperature of said inlet stream, but not more than about 2000° F. (1093° C.), whereby to produce a first catalyst zone effluent comprising primarily methane, hydrogen, carbon monoxide, carbon dioxide and H_2O and C_2–C_4 hydrocarbons;

(d) passing said effluent to a treatment zone for the removal of carbon dioxide and water therefrom;

(e) withdrawing the treated first catalyst zone effluent as a secondary synthesis gas; and

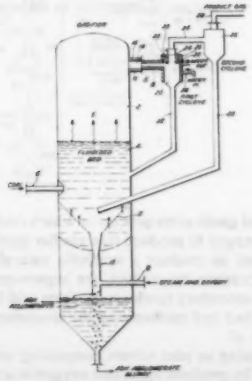
(f) methanating said gasifier synthesis gas and said secondary synthesis gas to provide therefrom synthetic natural gas.

2. The process of claim 1 further including the step of passing said first catalyst zone effluent, while still at an elevated temperature, from said first catalyst zone to a second catalyst zone containing a steam reforming catalyst therein, and contacting the first zone effluent in said second catalyst zone with said steam reforming catalyst to react hydrocarbons therein with H_2O to produce hydrogen and carbon oxides therefrom, and then passing the effluent of said second catalyst zone as said effluent to said treatment zone of step (d).

4,483,692
PROCESS FOR THE RECYCLING OF COAL FINES FROM A FLUIDIZED BED COAL GASIFICATION REACTOR

Jitendra G. Patel, Bolingbrook, Ill., assignor to Institute of Gas Technology, Chicago, Ill.

Filed Jan. 27, 1983, Ser. No. 461,443
Int. Cl.³ C10J *3/06, 3/54;* C10K *1/02*
U.S. Cl. 48—210 **10 Claims**



1. A process for recycling coal fines and ash particles in the reaction effluent from a fluidized bed reactor system for the gasification of coal which comprises:

(a) passing said reaction effluent containing said coal fines and ash particles into a gasifier exit pipeline and a cyclone inlet pipeline;

(b) shock cooling and thereby hardening the exteriors of coal fines and ash particles which impact on at least a portion of contact surfaces of the gasifier exit pipeline and the cyclone inlet pipeline by actively maintaining at least the portion of the contact surfaces of said gasifier exit pipeline and said cyclone inlet pipeline at a temperature lower than the temperature of said reaction effluent entering the pipeline to substantially completely prevent adhesion of said coal fines and ash particles on the contact surfaces of said pipelines;

(c) passing said reaction effluent into a first cyclone system;

(d) shock cooling and thereby hardening the exteriors of coal fines and ash particles which impact on at least a portion of the inside surface of the first cyclone system by actively maintaining at least the portion of the inside surface of said first cyclone system at a temperature lower than said temperature of said reaction effluent entering the pipelines to substantially completely prevent adhesion of said coal fines and ash particles on the inside surface of said first cyclone system;

(e) separating coal fines and ash particles from said reaction effluent by said first cyclone system;

(f) recycling said coal fines and ash particles from said first cyclone system to said fluidized bed;

(g) passing said reaction effluent to a second cyclone system for further separation of said coal fines and ash particles from said reaction effluent, thereby forming a product gas;

(h) recycling said coal fines and ash particles from said second cyclone system to said fluidized bed for further gasification; and

(i) passing said product gas to a collection system.

4,483,693
REFORMING OF HYDROCARBONS IN THE PRESENCE OF SULFUR

Gerald A. White, Los Angeles; Theodore R. Roszkowski, Malibu, both of Calif., and Harold W. Fleming, Jefferson Town, Ky., assignors to The Ralph M. Parsons Co., Pasadena, Calif.

Continuation of Ser. No. 98,231, Nov. 28, 1979, abandoned, which is a continuation of Ser. No. 899,729, Apr. 24, 1978, abandoned, which is a continuation of Ser. No. 741,752, Nov. 15, 1976, abandoned, which is a continuation-in-part of Ser. No. 625,878, Oct. 28, 1975, Pat. No. 3,999,961, which is a continuation-in-part of Ser. No. 525,483, Nov. 20, 1974, abandoned. This application May 20, 1982, Ser. No. 380,236
The portion of the term of this patent subsequent to Dec. 28, 1993, has been disclaimed.
Int. Cl.³ C01B *2/14*
U.S. Cl. 48—213 **19 Claims**

1. In a process for the reforming of hydrocarbons wherein a gaseous stream comprising a hydrocarbon and water as steam is contacted with a supported reforming catalyst comprising at least one metal from the third period of Group VIII of the Periodic Table on an alumina support at a temperature from about 900° F. to about 1600° F., and in which water is present in an excess amount above the stoichiometric amount required for reforming to prevent the formation of carbon, the improvement which comprises providing in the gaseous stream undergoing reforming at least 1 part per million by volume hydrogen sulfide in place of at least a portion of the excess water required to prevent carbon formation, and during reforming a source of hydrogen selected from the group consisting of free hydrogen, carbon monoxide which provides hydrogen by reaction with water, and mixtures thereof in an amount at least sufficient for the stoichiometric conversion of all of the carbon in the hydrocarbon to methane, employing as the alumina support for the reforming catalyst, an alumina having a surface area of at least

30 m^2/g, and selected from the group consisting of the gamma form of alumina, the delta form of alumina, the theta form of alumina and mixtures thereof, said alumina being formed by calcining of an alumina monohydrate.

4,483,694

OXYGEN GAS PERMSELECTIVE MEMBRANE

Tsutomu Takamura; Atsuo Imai, both of Yokohama, and Nobukazu Suzuki, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Mar. 14, 1983, Ser. No. 475,687
Claims priority, application Japan, Jun. 24, 1982, 57-107631; Sep. 10, 1982, 57-156758
Int. Cl.³ B01D *53/22*
U.S. Cl. 55—158 13 Claims

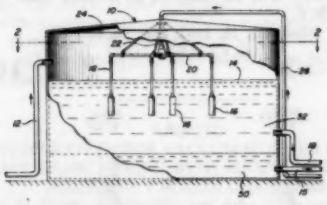
1. An oxygen gas permselective membrance which comprises a film consisting essentially of a water-containable or wettable metallic oxide which comprises at least one selected from the group consisting of stannic oxide, zinc oxide, aluminum oxide, magnesium oxide, calcium oxide, strontium oxide, barium oxide, titanium dioxide, and silicon dioxide.

4,483,695

APPARATUS FOR VIBRATION SEPARATION OF OIL AND WATER

Walter R. Covey, Jr., Rte. 10, Box 524, Ashe Rd., Bakersfield, Calif. 93309

Filed Apr. 2, 1984, Ser. No. 595,962
Int. Cl.³ B01D *19/00*; C02F *1/34, 1/40*
U.S. Cl. 55—159 9 Claims



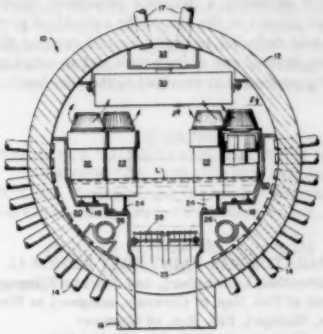
7. In combination with a settling tank including a quantity of crude oil therein consisting of a mixture of water and crude oil having gas suspended therein, said tank including low level water outlet means and oil outlet means disposed at a level above said low level, means operative to admit crude oil into said tank, vibration generating means freely suspended within said tank below the level of crude oil therein including a fluid pressure actuated elongated internal vibrator of the type including an internal eccentric weight orbited about an axis extending generally centrally longitudinally through said vibrator, and an elongated casing, said vibrator being loosely received within said casing and extending centrally longitudinally thereof, said casing being substantially closed and including support means therein mounting said vibrator in position within said casing substantially against movement of said vibrator relative to said casing and in a vibration transfer manner whereby vibration of the vibrator will be transferred to said casing.

4,483,696

STEAM SEPARATING APPARATUS AND SEPARATORS USED THEREIN

Albert J. Zipay, Clifton, and Walter P. Gorzegno, Morristown, both of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Sep. 7, 1982, Ser. No. 415,303
Int. Cl.³ B01D *19/00, 45/08*
U.S. Cl. 55—186 14 Claims



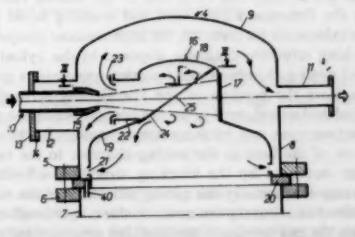
1. A steam separating apparatus comprising a cylindrical drum having inlet means for receiving a mixture of liquid and vapor from an external source; first outlet means disposed in the lower portion of said drum for discharging said liquid; second outlet means disposed in the upper portion of said drum for discharging said vapor; a first separating unit for receiving a steam-water mixture and discharging said mixture in a substantially tangential direction against an impingement plate to separate some water from said mixture; and a second separating unit disposed in a fluid flow relation to said first separating unit, said second separating unit comprising a plurality of plates together formed into a closed circular configuration, said plates being shaped in a manner to define a plurality of irregular paths for the passage of said steam with some water so that said mixture impinges on said plates as it passes through said paths to separate water still remaining in said steam.

4,483,697

COMPACT GAS LIQUID SEPARATOR

Jean-Yves J. Deysson, Paris, and André P. L. Potiron, Elancourt, both of France, assignors to Bertin & Cie, Plaisir, France

Filed May 25, 1982, Ser. No. 381,912
Claims priority, application France, May 26, 1981, 81 10431
Int. Cl.³ B01D *19/00*
U.S. Cl. 55—205 8 Claims



1. A compact gas-liquid separator for separating the gas contained in crude petrol from the crude oil at the time of its extraction comprising at least one cylindrical separation chamber having an axis which includes an inlet head and a liquid

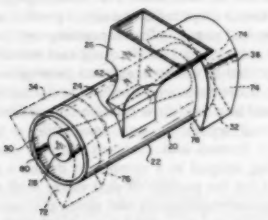
outlet and a degasification vessel, said inlet head comprising an inlet tube and a nozzle supported thereby and a cover, said nozzle positioned adjacent the inner wall of said cover, said cover including a cylindrical portion closed by a cap and said cover extending towards the bottom of said at least one separation chamber through a skirt closing the degasification vessel and including openings, said cylindrical portion of said cover, facing said nozzle, having an opening of a diameter greater than that of the said nozzle and spaced from the latter, said cover further including a deflector positioned therein and inclined with respect to the axis of the cylindrical portion of the cover, said deflector having a central opening disposed along the longitudinal axis of the nozzle and an outlet tube for the gas being positioned in provided at the inlet head.

4,483,698

APPARATUS FOR PAINT MIST REMOVAL

Gunther Küchenthal, Ludwigsburg, and Joachim Klingner, Gerlingen, both of Fed. Rep. of Germany, assignors to Werner & Pfleiderer, Stuttgart, Fed. Rep. of Germany

Filed Jun. 8, 1982, Ser. No. 386,363
Int. Cl.³ B01D *47/10*
U.S. Cl. 55—238 **11 Claims**



1. In an apparatus of the type for removing paint mist from exhaust air also entraining a washing liquid, the apparatus having a cylindrical-sided mixing chamber having at least one open end, a funnel inlet through the cylindrical side of the mixing chamber for the paint mist, exhaust air, and washing liqiud, and means providing a pressure differential between the at least one open end of the mixing chamber and the funnel inlet for drawing the paint mist, exhaust air, and washing liquid through the funnel inlet into the mixing chamber, outwardly therethrough toward the at least one open end of the mixing chamber with spiraling, turbulent, liquid-and-air-mixing flow, and from the at least one open end of the mixing chamber, whereat the thus-mixed paint mist and washing liquid settle from the exhaust air for removal, the improvement comprising:

a blocking structure centrally disposed in the cylindrical-sided mixing chamber from a portion proximate a projection from the position of the funnel inlet through the cylindrical side thereof to an end portion proximate the at least one open end of the mixing chamber for blocking access of the flow in the mixing chamber to the central space occupied by the blocking structure, whereby to increase substantially the mixing efficiency in the mixing chamber and thus the removal of paint mist thereafter, and

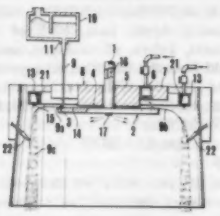
wherein the end portion of the blocking structure and the at least one open end of the mixing chamber being constructed and arranged to define a venturi-shaped outlet structure, whereby to provide enhanced turbulent flow at the outlet with reduced pressure drop across the outlet.

4,483,699

METHOD FOR PRODUCING GLASS FIBERS WITH CENTRIFUGAL FORCE

Kyosuke Kawai, Kanagawa; Mitsuru Nakagawa, Tokyo; Shinji Yanase, and Kiyoshi Kawai, both of Kanagawa, all of Japan, assignors to Japan Inorganic Material Co., Ltd., Kanagawa, Japan

Filed Mar. 11, 1983, Ser. No. 474,348
Claims priority, application Japan, Mar. 17, 1982, 57-42080
Int. Cl.³ C03B *37/05*
U.S. Cl. 65—8 **5 Claims**



1. A method for producing glass fibers by means of centrifugal force, comprising

flowing-down a molten glass stream into grooves coated with a glass layer and being radially engraved on a peripheral portion of a flat rotating disc,

maintaining the grooves at a temperature 400° to 500° C. lower than the temperature of the molten glass stream so as to form a thermal boundary layer between the glass coating layer and the glass flow along said grooves, and

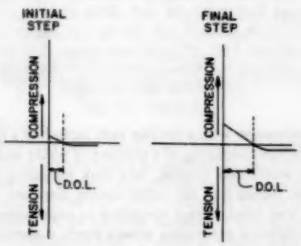
spouting the molten glass in a radial direction from the rotating disc by means of centrifugal force of the rotating disc to form elongated molten glass fibers.

4,483,700

CHEMICAL STRENGTHENING METHOD

Ray B. Forker, Jr., Beaver Dams, and Joseph N. Panzarino, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Aug. 15, 1983, Ser. No. 523,088
Int. Cl.³ C03C *21/00*
U.S. Cl. 65—30.14 **6 Claims**



1. In a method of chemically strengthening a sodium silicate glass article by ion exchange wherein the glass article is contacted with a source of exchangeable ions larger than sodium ions at a temperature above the glass strain point and for a time sufficient to replace sodium ions without causing a compressive stress in the article, and subsequently further contacted with said source of exchangeable larger ions at a temperature below the glass strain point for a time sufficient to replace sodium ions and provide a compressive stress in the article surface, an improvement whereby the glass is maintained throughout the process in a single, temperature-programmed

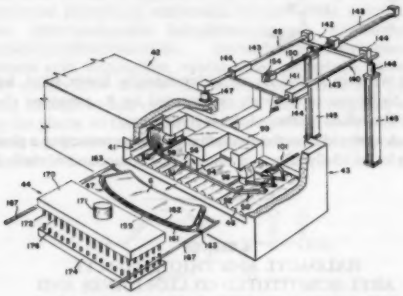
bath containing said source of exchangeable larger ions, the glass article not being removed from the bath between the contacting and further contacting stages of the process.

4,483,701

COOLING VACUUM HOLDER BY SUCTION FLUID FLOW

John D. Kellar, Pontypool, and Gordon F. Pereman, Columbus, both of Canada, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 24, 1983, Ser. No. 496,222
Int. Cl.³ C03B 23/035
U.S. Cl. 65—106 4 Claims



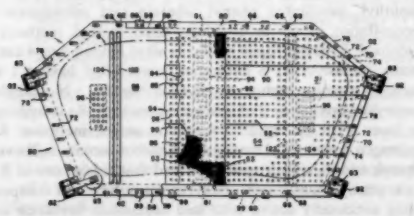
1. In the art of shaping hot sheets of heat-softenable material such as glass by engaging at least one sheet with a vacuum holder while the sheet and a hot sheet engaging surface of said holder are in a hot atmosphere, releasing said sheet from said holder, transferring said holder into a cooler atmosphere to cool said holder between successive sheet shaping steps, and returning said holder to said hot atmosphere to engage at least one other hot sheet, the improvement comprising sucking air into said holder from said cooler atmosphere while said holder is outside said hot atmosphere, whereby said holder is cooled between successive bending operations at a greater rate of cooling than if said holder is transferred to said cooler atmosphere for exposure without applying suction or for exposure while blowing air that is imparted to said vacuum holder within said hot atmosphere from said vacuum holder to said cooler atmosphere.

4,483,702

MULTIPLE CHAMBER VACUUM HOLDER USED TO SHAPE GLASS SHEETS WITH MEANS TO ISOLATE ADJACENT VACUUM CHAMBERS

Robert G. Frank, Murrysville, and John J. Ewing, Tarentum, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 24, 1983, Ser. No. 496,221
Int. Cl.³ C03B 23/035
U.S. Cl. 65—273 8 Claims



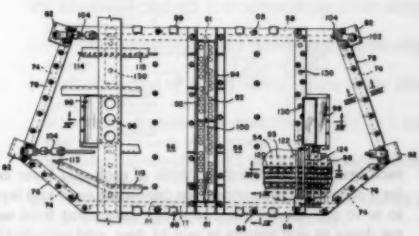
1. A vacuum holder for use in shaping a sheet of glass or other deformable material comprising an upper sheet wall, a perforated lower sheet wall, a porous cover covering said perforated lower sheet wall and communicating with perforations through said perforated sheet wall, and spacer means connecting said walls in spaced relation to provide a plurality of chambers, means adapted to communicate each said chamber to a source of vacuum, means to control the level of vacuum in different of said chambers to bring adjacent of said chambers to different vacuum levels, the presence of said porous cover in communication with said perforations through said perforated lower sheet wall when engaging a sheet to be shaped causing the level of vacuum in said adjacent chambers to tend to equalize, characterized by a narrow transversely extending space between said adjacent chambers, and means to communicate said narrow transversely extending space with the environment surrounding said vacuum holder.

4,483,703

DEFORMABLE VACUUM HOLDER WITH HELICAL COIL SPRINGS FOR SHAPING GLASS

John D. Kellar, Pontypool, and Gordon F. Pereman, Columbus, both of Canada, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 24, 1983, Ser. No. 496,225
Int. Cl.³ C03B 23/035
U.S. Cl. 65—273 7 Claims



1. A deformable vacuum holder for shaping glass sheets comprising an upper flexible sheet wall, a lower apertured flexible sheet wall, spacer means spacing said walls from one another to enclose a deformable enclosed chamber having a desired thickness between said flexible sheet walls, means adapted to couple said chamber to a source of vacuum for reducing the pressure within said chamber to a subatmospheric level to draw a heat softened glass sheet thereagainst, means connected to said holder adapted to distort the shape of said holder and end forming means engageable by said upper flexible sheet wall to define the distorted shape of said deformable vacuum holder, characterized by a plurality of essentially parallel helical coil springs extending longitudinally lengthwise of said vacuum holder between said flexible sheet walls, said helical coil springs extending along a straight line when free from external force and distortable into a curved shape when said vacuum holder is distorted.

4,483,704

METHOD FOR COMPOSTING SLUDGE

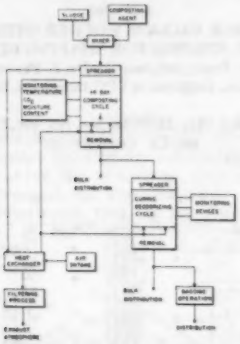
James M. Easter, II, P.O. Box 23, Owings Mills, Md. 21117

Division of Ser. No. 176,197, Aug. 7, 1980, Pat. No. 4,374,804.
This application Oct. 28, 1982, Ser. No. 437,299
Int. Cl.³ C05F 7/00
U.S. Cl. 71—9 11 Claims

1. A method for composting sludge, comprising:

mixing sludge with a composting agent and, after thoroughly mixing the combination, depositing the mixture in a first enclosed area in even layers, said thoroughly mixed combination of said sludge and said composting agent being adjusted so that said mixture has a 30 to 1 carbon-nitrogen ratio, blowing air through the mass from the

bottom to the top, periodically removing layers from the bottom of the enclosed area at a rate so that the passage time of the mixture from the top down to the bottom where it is removed is a period of 14 days, said depositing of even layers each being for a controlled depth of each said layer and for a controlled time period for depositing each said layer so as to provide for the controlled movement from said top down to said bottom in said 14 days, thereafter, redepositing the removed mixture into a second enclosed area in even layers, blowing air through the second mass from the bottom to the top, periodically removing layers from the bottom of said second enclosed area at a rate so the passage time of the mixture from the top down to the bottom where it is removed as a layer is a second period of 14 days, said depositing of even layers



each being for a controlled depth of each said layer and for a controlled time period for depositing each said layer so as to provide for the controlled movement from said top down to said bottom in said 14 days, said periodically removing of layers from the bottom of both said first and said second enclosed areas being coordinated with the depositing of the next succeeding layer at the top, during said passage downwardly of said mixture in both said first and said second enclosed areas controlling the temperatures of said mixture at a plurality of zones in a plurality of temperature ranges, during the processing monitoring the carbon dioxide content of gases and monitoring the moisture content of various aspects of the process, passage through said first enclosed area composting the material and passage through said second enclosed area eliminating any odors therein.

4,483,705

ALKYLPHOSPHONATE DIESTERS AND MONOESTERS OF N-PHOSPHONOMETHYLGLYCINATE AS HERBICIDES

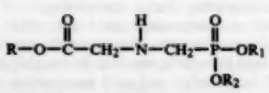
William R. Purdum, Maryland Heights, Mo., assignor to Monsanto Co., St. Louis, Mo.

Continuation-in-part of Ser. No. 275,461, Jun. 19, 1981, abandoned. This application Mar. 28, 1983, Ser. No. 479,247

Int. Cl.³ A01N *57/20, 57/24;* **C07F** *9/40*

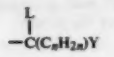
U.S. Cl. 71—086 **25 Claims**

1. Alkylphosphonate esters of N-phosphonomethylglycinate of the formula

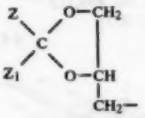


(I)

wherein R is lower alkyl; R_1 is a



group wherein n is an integer of from 0 to 4, L is hydrogen or lower alkyl and Y is selected from the group consisting of trihalomethyl, alkoxycarbonyl, furanyl, pyrrolidinyl, pyranyl group and a



group wherein Z and Z_1 are independently lower alkyl, and R_2 is hydrogen or a group represented by R_1 provided that when Y is alkoxycarbonyl, R_2 is hydrogen.

21. A herbicidal method which comprises contacting a plant with a herbicidally effective amount of a compound of claim 1.

4,483,706

HALOACYL AND THIOHALOACYL ARYL-SUBSTITUTED OXAZOLIDINES AND THIAZOLIDINES HERBICIDAL ANTIDOTES

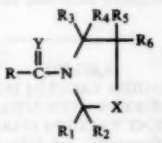
Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 317,957, Nov. 4, 1981, , which is a division of Ser. No. 840,973, Oct. 11, 1977, Pat. No. 4,322,240, which is a division of Ser. No. 627,986, Nov. 3, 1975, Pat. No. 4,072,688, which is a continuation-in-part of Ser. No. 550,069, Feb. 14, 1975, abandoned. This application May 6, 1983, Ser. No. 492,271

Int. Cl.³ A01N *43/76, 43/78*

U.S. Cl. 71—88 **47 Claims**

1. The method of protecting a crop from injury, said injury due to a substituted acetanilide herbicide, comprising pre-plant incorporation in the soil in which said crop is to be planted and grown, a non-phytotoxic antidotally effective amount of a compound corresponding to the formula



in which X and Y are independently oxygen or sulfur; R is haloalkyl having 1 to 6 carbon atoms, inclusive, or chloroalkenyl having 2 to 4 carbon atoms, inclusive; R_1 is hydrogen, lower alkyl having 1 to 4 carbon atoms, inclusive, phenyl, naphthyl, substituted phenyl wherein said substituents are mono-fluoro, mono- or di-chloro, nitro, methyl, methoxy, or hydroxyl; R_2 is hydrogen or lower alkyl having 1 to 4 carbon atoms, inclusive; R_3 is hydrogen, lower alkyl having 1 to 4 carbon atoms, inclusive, hydroxymethyl, N-methylcarbamoyloxymethyl or dichloroacetoxymethyl; R_4 is hydrogen, or loeer alkyl having 1 to 4 carbon atoms, inclusive; R_5 is hydrogen, lower alkyl having 1 to 4 carbon atoms, inclusive, or phenyl; and R_6 is hydrogen; provided that at least one of R_1 or R_5 is phenyl, substituted phenyl or naphthyl; said compound being antidotally active with said acetanilide herbicide compound and wherein said compound is present in an amount between about 0.0001 to about 30 parts by weight of antidote compound per each part by weight of herbicide.

4,483,707

PHENYLAMINO-OXO-ACETIC ACIDS AND ESTERS THEREOF AS ANTIDOTES FOR PROTECTING CULTIVATED PLANTS FROM THE PHYTOTOXIC ACTION OF AGGRESSIVE HERBICIDES

Werner Breitenstein; Werner Föry; Robert Nyfeler, all of Basel, Switzerland, and Manfred Böger, Weil am Rhein, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

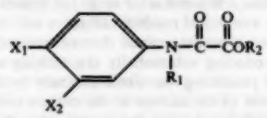
Filed Jan. 31, 1983, Ser. No. 462,257

Claims priority, application Switzerland, Feb. 11, 1982, 854/82

Int. Cl.³ A01N *43/40, 37/44*

U.S. Cl. 71—94 6 Claims

1. In the method of controlling weed growth in the area of cultivated plants by application of a herbicide of the triazine, triazinone, phenylurea, carbamate, thiocarbamate, haloacetanilide, chloroacetamide, halophenoxyacetate, diphenylether, pyridyloxyphenoxyacetate, pyridyloxyphenoxyacetamide, benzoic acid, nitroaniline, oxadiazolone, phosphate, pyrazole, and sulfonylurea classes, the improvement reducing phytotoxic damage to said cultivated plants which comprises treating the plants, or the seeds, tubers or seedlings from which the plants are grown, with an antidotal amount of a compound of the formula:



wherein each of X_1 and X_2, independently of the other, is hydrogen, halo or halomethyl, at least one of X_1 and X_2 being other than hydrogen;

R_1 is hydrogen or alkyl of 1 to 4 carbon atoms; and

R_2 is

(a) hydrogen

(b) alkyl of 1 to 18 carbon atoms, unsubstituted or substituted with

(i) $-(CH_2CH_2O)_nR'$ or $-(CH_2CH_2CH_2O)_nR'$ in which n has a value of 2, or 3 and R' is hydrogen or alkyl of 1 to 6 carbon atoms;

(ii) alkylthio of 1 to 6 carbon atoms;

(iii) hydroxyalkylthio of 1 to 6 carbon atoms;

(iv) alkoxycarbonyl of 1 to 6 carbon atoms in the alkoxy group;

(v) alkylthiocarbonyl of 1 to 6 carbon atoms in the alkyl group;

(vi) alkylcarbonyl of 1 to 6 carbon atoms in the alkyl group;

(vii) amino, alkylamino or dialkylamino of 1 to 6 carbon atoms in each alkyl group;

(viii) alkenylcarbonyloxy of 2 to 18 carbon atoms in the alkenyl group;

(ix) carbamoyl, alkylcarbamoyl or dialkylcarbamoyl of 1 to 4 carbon atoms in each alkyl group;

(x) hydroxy;

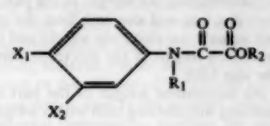
(xi) cycloalkyl of 3 to 6 carbon atoms; or

(xii) phenyl which is unsubstituted or substituted with halo, cyano, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, alkylthio of 1 to 6 carbon atoms, alkylcarbonyl of 1 to 6 carbon atoms in the alkyl group, or nitro;

(c) alkenyl or alkynyl of 3 to 6 carbon atoms, unsubstituted or substituted with phenyl, said phenyl in turn being unsubstituted or substituted with halo, cyano, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, alkylthio of 1 to 6 carbon atoms, alkylcarbonyl of 1 to 6 carbon atoms in the alkyl group, or nitro; or

(d) cycloalkyl of 3 to 8 carbon atoms.

3. A herbicidal composition comprising (i) a herbicidally effective amount of a herbicide selected from the group consisting of triazine, triazinone, phenylurea, carbamate, thiocarbamate, haloacetanilide, chloroacetamide, halophenoxyacetate, diphenylether, pyridyloxyphenoxyacetate, pyridyloxyphenoxyacetamide, benzoic acid, nitroaniline, oxadiazolone, phosphate, pyrazole, and sulfonylurea herbicides and (ii) an antidotal amount of a compound of the formula:



wherein each of X_1 and X_2, independently of the other, is hydrogen, halo or halomethyl, at least one of X_1 and X_2 being other than hydrogen;

R_1 is hydrogen or alkyl of 1 to 4 carbon atoms; and

R_2 is

(a) hydrogen

(b) alkyl of 1 to 18 carbon atoms, unsubstituted or substituted with

(i) $-(CH_2CH_2O)_nR'$ or $-(CH_2CH_2CH_2O)_nR'$ in which n has a value of 2, or 3 and R' is hydrogen or alkyl of 1 to 6 carbon atoms;

(ii) alkylthio of 1 to 6 carbon atoms;

(iii) hydroxyalkylthio of 1 to 6 carbon atoms;

(iv) alkoxycarbonyl of 1 to 6 carbon atoms in the alkoxy group;

(v) alkylthiocarbonyl of 1 to 6 carbon atoms in the alkyl group;

(vi) alkylcarbonyl of 1 to 6 carbon atoms in the alkyl group;

(viii) amino, alkylamino or dialkylamino of 1 to 6 carbon atoms in each alkyl group;

(viii) alkenylcarbonyloxy of 2 to 18 carbon atoms in the alkenyl group;

(ix) carbamoyl, alkylcarbamoyl or dialkylcarbamoyl of 1 to 4 carbon atoms in each alkyl group;

(x) hydroxy;

(xi) cycloalkyl of 3 to 6 carbon atoms; or

(xii) phenyl which is unsubstituted or substituted with halo, cyano, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, alkylthio of 1 to 6 carbon atoms, alkylcarbonyl of 1 to 6 carbon atoms in the alkyl group, or nitro;

(c) alkenyl or alkynyl of 3 to 6 carbon atoms, unsubstituted or substituted with phenyl, said phenyl in turn being unsubstituted or substituted with halo, cyano, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, alkylthio of 1 to 6 carbon atoms, alkylcarbonyl of 1 to 6 carbon atoms in the alkyl group, or nitro; or

(d) cycloalkyl of 3 to 8 carbon atoms.

4,483,708

METHOD AND APPARATUS FOR REGULATING THE MELTING RATE OF AN ELECTRODE DURING ELECTROSLAG REMELTING

Manfred Gfrerer, Erlangen, Fed. Rep. of Germany; Heimo Jäger, Bruck an der Mur, and Friedrich Koch, Kapfenberg, both of Austria, assignors to Vereinigte Edelstahlwerke Aktiengesellschaft (VEW), Vienna, Austria

Filed Feb. 22, 1982, Ser. No. 350,811

Claims priority, application Austria, Feb. 25, 1981, 866/81

Int. Cl.³ C22B *4/00*

U.S. Cl. 75—10 R 3 Claims

1. In a method of regulating the melting rate of a self-consumable electrode which is lowered at a lowering speed into a slag bath during electroslag remelting, while a current of measured intensity is passed through the electrode at a measured potential, wherein the lowering speed is regulated in consideration of maintaining a melting rate reference value and the current intensity and the potential are regulated in consider-

ation of maintaining a current intensity reference value and a potential reference value, respectively, the improvement which comprises the steps of:

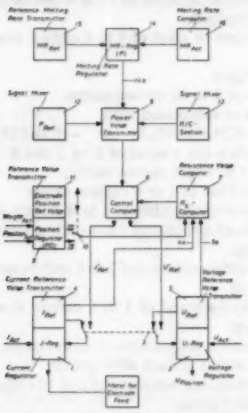
continuously determining an actual total electrode weight;

continuously determining the length of the electrode above the surface of the slag bath;

continuously determining the weight of the part of the electrode immersing into said slag bath from the continuously determined actual total electrode weight and the continuously determined length of the electrode above the surface of the slag bath;

comparing the determined weight of the part of the electrode immersing into the slag bath with a weight reference value;

upon deviation of the determined weight of the part of the



electrode immersing into the slag bath from the weight reference value changing the ratio of the potential reference value to the current intensity reference value in such a manner so as to maintain essentially constant the product of the potential reference value and the current intensity reference value so as to essentially obtain coincidence of the determined weight of the part of the electrode immersing into the slag bath with the weight reference value;

determining the actual melting rate and comparing the determined actual melting rate with the melting rate reference value; and

upon deviation from the melting rate reference value changing the product of the current intensity reference value and the potential reference value so as to essentially obtain coincidence of the determined actual melting rate and the melting rate reference value.

4,483,709

STEEL PRODUCTION METHOD

Eberhard G. Schempp; Jai K. Pearce, and David L. Schroeder, all of Pittsburgh, Pa., assignors to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

Division of Ser. No. 238,338, Mar. 27, 1972, Pat. No. 3,905,589. This application May 14, 1975, Ser. No. 577,526

Int. Cl.³ C21C *5/52*

U.S. Cl. 75—12 **19 Claims**

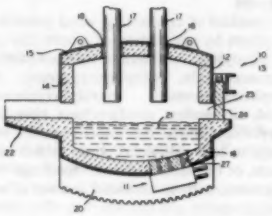
1. A method of melting scrap metal and refining the melted molten metal in an electric arc furnace having a shell provided with a mouth, a refractory lining on said shell, a removable roof for sealing said mouth, a melting electrode reciprocable through said roof into and out of contact with said scrap metal, a hearth line defining with said furnace an upper level of said molten metal and a tuyere extending through said shell and said refractory lining flush with said refractory lining and having an inner pipe and a concentric outer pipe defining an annulus with said inner pipe, said method including the steps of:

a. charging said furnace with said scrap metal;

b. melting a hole in said scrap metal to produce molten metal;

c. energizing said electrode to heat said scrap metal with heat from said electrode;

d. blowing an oxygen bearing gas from said inner pipe through said molten metal to decarburize said molten metal while simultaneously continuing to melt said scrap



metal so that when said scrap metal has melted into molten metal the amount of residual carbon in said molten metal is less than a predetermined desired amount of carbon, thereby reducing substantially the melting and refining cycle and producing heat exothermically by the chemical combination of the carbon in the molten metal with the oxygen in the oxygen bearing gas to aid in the melting of said scrap metal; and

e. refining said molten metal to the desired metallurgical composition and pouring temperature.

4,483,710

ADDITION AGENT FOR ADDING VANADIUM TO IRON BASE ALLOYS

Gloria M. Faulring, Niagara Falls, N.Y.; Alan Fitzgibbon, Gibsonia, Pa., and Anthony F. Nasiadka, Lockport, N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 249,503, Mar. 31, 1981, Pat. No. 4,396,425. This application Jan. 25, 1983, Ser. No. 460,871

Int. Cl.³ C21C *7/00*

U.S. Cl. 75—129 **8 Claims**

1. In a method of treating a molten iron-base alloy with an additive material by injecting finely divided particles of said additive material into said molten alloy with a carrier gas stream, the improvement which comprises injecting an agglomerated blended mixture of about 50 to 70% by weight of finely divided V_2O_3 with about 30 to 50% by weight of a finely divided calcium-bearing material selected from the group consisting of calcium-silicon alloy, calcium carbide and calcium cyanamide.

4,483,711

AQUEOUS ELECTROLESS NICKEL PLATING BATH AND PROCESS

Edward P. Harbulak, Allen Park, and Cynthia A. Stants nee Halliday, Lincoln Park, both of Mich., assignors to OMI International Corporation, Warren, Mich.

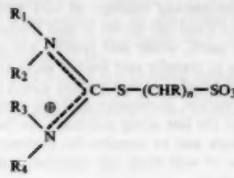
Continuation-in-part of Ser. No. 503,881, Jun. 17, 1983, abandoned. This application Mar. 5, 1984, Ser. No. 583,759

Int. Cl.³ C23C *3/02*

U.S. Cl. 106—1.22 **20 Claims**

1. An aqueous electroless nickel plating bath comprising nickel ions and hypophosphite ions in an amount sufficient to chemically deposit nickel and an amount of a sulfonium betaine compound sufficient to control the rate of nickel deposition and the concentration of phosphorus in the nickel deposit, said

sulfonium betaine compound corresponding to the structural formula:



Wherein:

R_1, R_2, R_3 and R_4 are the same or different and are H, C_1–C_6 alkyl radicals, C_1–C_6 hydroxy alkyl radicals,

R is the same or different and is H or OH, and

n is an integer of from 1 to 5,

as well as mixtures thereof.

4,483,712

WATER-BORNE LAMINATING INK

Patrick N. Murphy, Granite City, Ill., assignor to Crown Zellerbach Corporation, San Francisco, Calif.

Filed Oct. 3, 1983, Ser. No. 538,080

Int. Cl.³ C09D *11/08*

U.S. Cl. 106—30 **9 Claims**

1. An ink comprising:

(a) a binder comprising shellac or copal,

(b) a volatile component comprising water and a solvent for the binder, with the ratio of water to solvent being at least 1:1,

(c) a base,

(d) a water-reducible titanium ester chelate, and

(e) a colorant.

4,483,713

COMPOSITIONS FOR PREPARING INORGANIC FOAMED BODIES

Hideo Motoki, Ibaraki, Japan, assignor to Shikoku Kaken Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP81/00301, § 371 Date Jun. 21, 1982, § 102(e) Date Jun. 21, 1982, PCT Pub. No. WO82/01544, PCT Pub. Date May 13, 1982

PCT Filed Oct. 28, 1981, Ser. No. 394,919

Claims priority, application Japan, Oct. 30, 1980, 55-153642; Nov. 7, 1980, 55-157254

Int. Cl.³ C04B *19/04*

U.S. Cl. 106—75 **16 Claims**

1. A composition for preparing inorganic foamed bodies consisting essentially of as its active components:

(A) a water-soluble silicate of alkali metal and/or ammonium,

(B) a metallic blowing agent,

(C) a hardening agent other than alumina cement for the water-soluble silicate, and

(D) a foaming stabilizer.

4,483,714

NITROCELLULOSE COMPOSITION AND PROCESS FOR PRODUCTION THEREOF

Matsuei Yamaue; Sadao Fukutomi; Seiichi Fukura, and Fumihiko Sato, all of Miyazaki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 12, 1980, Ser. No. 206,312

Claims priority, application Japan, Dec. 28, 1979, 54-170312; Jun. 16, 1980, 55-80137; Jun. 18, 1980, 55-81399

Int. Cl.³ C08J *3/08*; C08K *5/01, 5/04*; C08L *1/18*

U.S. Cl. 106—279 **10 Claims**

1. A non-sticking molded solid nitrocellulose composition containing substantially no water, which consists of a homogeneous phase comprising about 60% to 80% by weight nitrocellulose as a sole solid forming component, an organic liquid inert to isocyanate which is an organic solvent capable of dissolving nitrocellulose, and an organic non-solvent incapable of dissolving nitrocellulose and being selected from the group consisting of hexane, heptane, octane, solvent naphtha, cyclohexane, methyl cyclohexane, benzene, toluene, and xylene, the weight ratio of said organic solvent to said organic non-solvent in the mixture being at least 1/9, said non-sticking molded solid nitrocellulose composition being produced by mixing a nitrocellulose starting material wetted with alcohol, water or both, with the solvent or the mixture of the solvent and non-solvent, wherein the solvent is used in the smallest amount possible to obtain a semi-solid composition, molding the semi-solid composition and then removing the alcohol, water or both from the molded composition by distillation.

5. A process for producing a non-sticking molded solid nitrocellulose composition containing substantially no water and consisting of a homogeneous phase, which comprises mixing a nitrocellulose starting material wetted with alcohol, water or both, with a solvent capable of dissolving nitrocellulose and a non-solvent incapable of dissolving nitrocellulose selected from the group consisting of hexane, heptane, octane, solvent naphtha, cyclohexane, methyl cyclohexane, benzene, toluene, and xylene to obtain a semi-solid homogeneous composition, molding the semi-solid homogeneous composition, and removing the alcohol, water or both from the molded composition by distillation.

4,483,715

METHOD FOR REMOVING DIBASIC CALCIUM HYPOCHLORITE SCALE

Robert B. Simmons, Norton, Ohio, and David A. Stermole, New Martinsville, W. Va., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 1, 1983, Ser. No. 519,439

Int. Cl.³ B08B *3/08*; C01B *11/06*

U.S. Cl. 134—2 **15 Claims**

1. A process for removing dibasic calcium hypochlorite scale deposited on the surfaces of equipment used for the production of calcium hypochlorite, which comprises submerging the surface containing the dibasic calcium hypochlorite scale in an aqueous medium selected from the group consisting of water and dilute aqueous acidic solution, thereby to form an aqueous alkaline solution containing solubilized dibasic calcium hypochlorite, adding a source of hydrogen ions under conditions of agitation to said aqueous alkaline solution while maintaining the pH of said aqueous solution at at least about 7, there by to solubilize the dibasic calcium hypochlorite scale from the surfaces of said equipment.

4,483,716

POULTICE METHOD FOR EXTRACTING HAZARDOUS SPILLS

Harold L. Heller, Narberth, Pa., assignor to The Franklin Institute, Philadelphia, Pa.

Filed Sep. 30, 1982, Ser. No. 429,095

Int. Cl.³ B08B *7/00*

U.S. Cl. 137—7 **17 Claims**

1. A process for removing a chemical substance from a porous substrate, said porous substrate comprising a construction material having said chemical substance absorbed therein, which comprises:

(a) applying to said porous substrate a poultice in the form of a paste comprising a finely divided particulate material dispersed in a volatile solvent in which said chemical substance is soluble, whereby said solvent is transferred from said poultice into said porous substrate;

(b) allowing said poultice to remain in contact with said porous substrate for a time sufficient for substantially complete evaporation of said solvent to occur thereby effecting extraction of said chemical substance from said

porous substrate into said particulate material component of said poultice by capillary flow.

9. A process for removing a toxic halogenated organic compound from a porous substrate which comprises:

(a) applying to said porous substrate a poultice in the form of a paste comprising a finely divided particulate material dispersed in a volatile solvent in which said halogenated orhanic compound is soluble and a detoxifying reagent for said halogenated organic compound, whereby said solvent and detoxifying reagent are transferred from said poultice into said porous substrate;

(b) allowing said poultice to remain in contact with said porous substrate for a time sufficient for evaporation of said solvent to occur thereby effecting extraction of said halogenated organic compound from said porous substrate into said particulate material component of said poultice by capillary flow and detoxification of said halogenated organic compound.

4,483,717

METHOD OF REMOVING ADSORBENT CONTAMINANTS FROM ELECTRICAL APPARATUS

John H. Olmsted, 16116 W. El Dorado Dr., New Berlin, Wis. 53151; Gary F. Lapp, 5576 Sonoma Dr., Pleasanton, Calif. 94566, and Jerry Tappa, 1510 De Soto Way, Livermore, Calif. 94550

Filed Oct. 8, 1981, Ser. No. 309,917

Int. Cl.³ B08B *7/04, 5/00*

U.S. Cl. 134—12 **10 Claims**

1. The process for the removal of polychlorinated biphenyl from electrical apparatus comprising:

contacting the apparatus with a solvent in a combination of liquid and vapor contacting cycles wherein said vapor condenses in-situ on the apparatus; said solvent being selected to enable its recovery and reuse by distillation from the polychlorinated biphenyls which it accumulates; and after the last vapor cycle, heating the apparatus to a temperature above the atmospheric boiling point of the solvent.

4,483,718

METHOD AND APPARATUS FOR CLEANING MACHINED PARTS

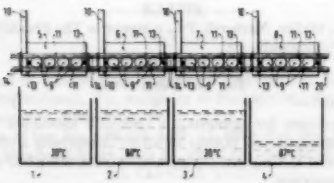
Erwin Bross, Asperg; Franz Staudinger, Berglen-Hösslinswart, and Theodor J. Tüchler, Hemmingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 15, 1983, Ser. No. 466,508

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1982, 3205816

Int. Cl.³ B08B *3/10*

U.S. Cl. 134—25.1 **11 Claims**



2. Mechanized method of cleaning machined parts in a series of dips into solvent or solvent vapor baths at respective dip stations by means of apparatus comprising a dip basket for each station equipped with rails for holding said parts in the basket and means for lowering and raising the basket and for agitating the same while at a dip station and also comprising sections of fixed rail means respectively located between successive pairs of said dip stations and at loading and unloading stations for interconnecting the basket rails in a raised position of the baskets to form a track for transferring said parts into and out of said baskets, said method comprising the steps of:

loading a predetermined number of said parts on a first section of said fixed rail means at said loading station;

advancing said parts, while said baskets are in said raised position so as to transfer said loaded parts at said loading station to a first basket of said baskets which is adjacent to said loading station, to transfer also the contents of each basket, except the last along said track, to the next basket along said track and to transfer the contents of said last basket to one of said fixed rail sections which is at said unloading station;

lowering said baskets into said baths and exposing said parts in said baskets to cleaning action in said baths;

raising said baskets from said baths to said raised position thereof, and

repeating the foregoing steps a plurality of times, the repetition of said loading step being performed prior to the step of raising said baskets in the previous cycle.

4. Method according to claim 2 in which after each advancing step and before the next lowering step the parts then in each basket are secured against movement, out of the basket within which the machined parts are located, along said rails, and after each raising step and before the next advancing step the parts are freed from restraint of their movement along said rails.

4,483,719

PROCESS FOR PREPARING FINE-GRAINED ROLLED ALUMINUM PRODUCTS

Peter Furrer, Pfungen; Jürgen Timm, Steisslingen, both of Switzerland, and Frank Wehner, Singen, Fed. Rep. of Germany, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Sep. 30, 1983, Ser. No. 537,942

Claims priority, application Switzerland, Aug. 23, 1983, 4584/83

Int. Cl.³ C22F *1/04*

U.S. Cl. 148—2 **3 Claims**

1. A process for the preparation of a rolled aluminum sheet characterized by a grain size of less than 10 μm when annealed to a temperature of at least 250° C., high strength and good formability comprising:

providing an aluminum base alloy consisting essentially of 0.8 to 1.5 wt.% iron, up to 0.5 wt.% silicon and manganese wherein the total silicon and manganese content is between 0.2 to 0.8 wt.% and up to 0.3 wt.% of any one impurity not to exceed a total of 0.8 wt.% impurities, balance essentially aluminum;

casting said alloy at a solidification rate of 2.5 to 25 cm/min.;

rolling the cast ingot to form a hot rolled plate;

cooling said hot rolled plate to less than 120° C. at a cooling rate of less than 0.5 K/sec.;

cold rolling said cooled hot rolled plate without prior annealing to a thickness reduction of at least 75%; and

annealing said cold rolled sheet at a temperature of from 250°–380° C.

4,483,720

PROCESS FOR APPLYING THERMAL BARRIER COATINGS TO METALS

Robert W. Bartlett, Tucson, Ariz., and Paul J. Jorgensen, Cupertino, Calif., assignors to S R I International, Menlo Park, Calif.

Filed Nov. 27, 1981, Ser. No. 325,504

Int. Cl.³ C23C *11/00*

U.S. Cl. 148—6.3 **7 Claims**

1. A method of coating a metal substrate with a protective coating which comprises:

(a) providing a substrate metal to be coated, said substrate being a structural article suitable for use in a mechanical structure having high mechanical strength,

(b) providing an alloy or mixture of at least one metal M_1, and at least one other metal M_2 selected according to the following criteria:

(1) M_1 is susceptible to oxidation by molecular oxygen at an elevated temperature in an atmosphere having a very small partial pressure of oxygen, such oxidation resulting in a stable oxide of M_1,

(2) M_2 does not form a stable oxide under such conditions and it forms an alloy with at least one component of the substrate on heat treatment of the coated material;

(c) applying such alloy or mixture to a surface of the substrate, under conditions such that the surface only is coated with an alloy of M_1 and M_2 and

(d) effecting selective oxidation of M_1 at an elevated temperature in the coating without substantial oxidation of M_2,

(e) the proportion of M_1 to M_2 in said alloy or mixture of M_1 and M_2 being substantial and sufficient to result in a coating containing sufficient oxide of M_1 to function as a substantial thermal barrier,

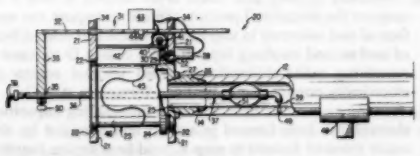
(f) the quantity of M_1 and M_2 being adequate to form a firm bond with the substrate and to form a substantial thermal barrier.

4,483,721

METHOD AND APPARATUS FOR CUTTING PATTERNS THROUGH PIPE

David D. Hearn, Richardson, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 27, 1983, Ser. No. 565,262
Int. Cl.³ B23K *7/04*
U.S. Cl. 148—9.6 **15 Claims**



1. A method for cutting a pattern in a tubular member, said method comprising:

positioning a cutting torch within the bore of said tubular member so that the tip of said cutting torch lies adjacent the starting point of said pattern to be cut;

rotating said tubular member; and

moving said torch within said bore of said tubular member in proper sequence with said rotation of said tubular member to thereby cut said pattern therein.

4,483,722

LOW ALLOY COLD-WORKED MARTENSITIC STEEL

Timothy J. Freeman, 3772 River La., Rocky River, Ohio 44116

Filed May 24, 1982, Ser. No. 381,197
Int. Cl.³ C21D *8/00*
U.S. Cl. 148—12 B **6 Claims**

1. A method of producing a low carbon, low alloy, martensitic, cold-worked steel comprising the steps of providing a steel having from 0.20% to 0.30% carbon, 0.80% to 1.2% manganese, 3.25% to 4.00% nickel, 1.25% to 2.00% chromium, 0.25% to 0.50% molybdenum, 0.20% to 0.50% silicon, and the balance iron and residual amounts of other elements, austenitizing said steel by heating said steel to a temperature above its A_3 temperature, air cooling said steel to a temperature below its M_3 temperature to transform said steel to an essentially martensitic structure, tempering said steel by heating said steel to or maintaining the steel at a temperature below its A_1 temperature to obtain a hardness of not greater than about 456 Brinell, and a final treating step consisting of cold working said steel at ambient temperature to reduce its cross section by about 1/32 to ¼ inch to increase its tensile and yield strengths without substantially increasing its tempered hardness and maintaining its elongation percent at above about 10.5 and its reduction of area percent at above about 46.9.

4,483,723

STEEL WITH ANTIMONY ADDITION

Grigory Lyudkovsky, Hammond, Ind., assignor to Inland Steel Company, Chicago, Ill.

Division of Ser. No. 299,807, Sep. 8, 1981, Pat. No. 4,421,574.
This application Feb. 23, 1983, Ser. No. 469,111
Int. Cl.³ B21B *3/02*; H01F *1/04*
U.S. Cl. 148—31.5 **9 Claims**

1. A cold rolled, annealed strip of carbon-containing electrical steel containing at least one uncombined alloying element having an affinity for oxygen greater than that of iron, said strip comprising:

a steel composition consisting essentially of, in wt. %:

carbon: up to 0.06
manganese: 0.20–0.75
silicon: 0.15–2.50
aluminum: 0.15–0.50
phosphorous: 0.12 max.
sulfur: 0.02 max.
antimony: 0.02–0.10
iron: essentially the balance

and an antimony-enriched layer at, and immediately adjacent, the surface of said steel strip;

said silicon and said aluminum providing said uncombined alloying elements having an affinity for oxygen greater than that of iron;

said steel strip being substantially resistant to the formation of an internal oxidation layer containing an oxide of said uncombined alloying elements and located adjacent the surface of said steel strip, when the steel strip is heated in an oxidizing atmosphere at a temperature which would cause the formation of said internal oxidation layer in the absence of said antimony-enriched layer.

4,483,724

IRON-BORON SOLID SOLUTION ALLOYS HAVING HIGH SATURATION MAGNETIZATION AND LOW MAGNETOSTRICTION

Ryusuke Hasegawa, Morristown, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Sep. 27, 1982, Ser. No. 423,915
Int. Cl.³ H01F *1/04*
U.S. Cl. 148—31.55 **3 Claims**

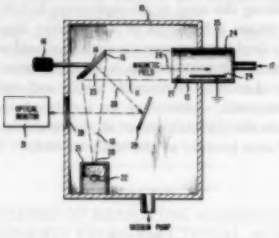
1. A ferromagnetic material, having a high saturation magnetization, low or near-zero magnetostriction and having a body centered cubic structure, consisting essentially of 1 to 3 atom percent boron, balance essentially iron plus incidental impurities.

4,483,725

REACTIVE VAPOR DEPOSITION OF MULTICONSTITUENT MATERIAL

Robert P. H. Chang, Warren, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 30, 1982, Ser. No. 429,289
Int. Cl.³ C23C *11/08*
U.S. Cl. 148—175 **33 Claims**



1. Method for producing an article, the article comprising at least at some time during its manufacture a multiconstituent first material overlying a second material substrate, the method comprising

(a) forming the first material by directly, in a vacuum deposition chamber, concurrently at least a first particle stream and a second particle stream at the substrate, characterized in that:

(b) the first particle stream comprises excited neutral particles, the excited neutral particle flux being a substantial fraction of the total particle flux of the first particle stream,

(c) the second particle stream consists essentially of neutral particles capable of undergoing a chemical reaction involving the excited neutral particles, and

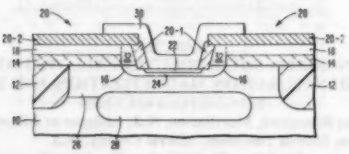
(d) the two particle streams are caused to intersect in a volume of space proximate to the substrate, the "reaction region", whereby first material is formed and deposited on the substrate.

4,483,726

DOUBLE SELF-ALIGNED FABRICATION PROCESS FOR MAKING A BIPOLAR TRANSISTOR STRUCTURE HAVING A SMALL POLYSILICON-TO-EXTRINSIC BASE CONTACT AREA

Randall D. Isaac; Tak H. Ning, and Paul M. Solomon, all of Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 280,142, Jun. 30, 1981, abandoned. This application Jul. 25, 1983, Ser. No. 517,155
Int. Cl.³ H01L *21/225*
U.S. Cl. 148—187 **6 Claims**



1. A method for fabricating a bipolar transistor structure comprising the steps of:

A. providing a substrate composed a first conductivity type semiconductor material and including a region of insulating material recessed therein and surrounding a central device region, a region of epitaxial material over said substrate and within said surrounding recessed insulating material to form a collector and a second conductivity type subcollector region in said substrate below said epitaxial collector and said central device region,

B. depositing a first layer of electrically insulating material over the surface of said substrate,

C. depositing a first layer of electrically conductive polysilicon over said first layer of electrically insulating material,

D. depositing a second layer of electrically insulating material over said first layer of electrically conductive polysilicon deposited in step C,

E. etching a vertical hole through said second layer of insulating material, said layer of conductive material and said first layer of insulating material over said central device region to expose the surface of said substrate to form a device region opening in said structure, said first and second layers of insulating material and said layer of conductive material extending within said region surrounded by said recessed insulating material,

F. depositing a second layer of electrically conductive first conductivity type doped polysilicon over said structure, including over the sidewalls of said vertical hole and over said device region opening, said electrically conductive doped polysilicon over said sidewalls of said vertical hole being in contact with said first layer of electrically conductive polysilicon deposited in step C,

G. etching away horizontal portions of said second layer of electrically conductive polysilicon to leave remaining vertical portions of said second layer of electrically conductive polysilicon on said sidewalls of said vertical hole to form a vertical region of doped electrically conductive polysilicon between said first layer of electrically conductive polysilicon and the surface of said substrate,

H. driving in first conductivity type impurities from said remaining second layer of doped, electrically conductive polysilicon region of step G into said surface of said substrate to form an extrinsic base region having a width substantially the same as said doped, electrically conductive polysilicon region,

I. oxidizing said exposed surface of said substrate provided in step E and the sidewall of said vertical region of electrically conductive polysilicon formed in step G such that said vertical region has a width less than said extrinsic base region,

J. depositng a layer of oxider over said oxide formed in step I,

K. vertically etching said oxide layer formed in step J to remove the horizontal portion thereof to expose the surface of said substrate in said device region and said surface of said second insulting layer formed in step D to leave a remaining oxide sidewall over said vertical region of electrically conductive polysilicon formed in step G,

L. forming an intrinsic base region by introducing impurities through the hole formed in step E and bounded by the oxide sidewall formed in step K, said base region thereby being aligned with said oxide sidewall,

M. implanting a second conductivity type emitter electrode in said device region, said emitter electrode being aligned with said oxide sidewall formed in step K and and thereby also aligned with said base region formed in step L.

4,483,727

HIGH MODULUS POLYETHYLENE FIBER BUNDLES AS REINFORCEMENT FOR BRITTLE MATRICES

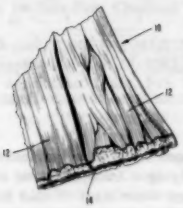
Nancy C. Eickman, Mountainside, N.J.; Walter Fabisiak, Easton, Pa., and Robert Dix, Wayne, N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Feb. 7, 1983, Ser. No. 464,269
Int. Cl.³ D01G *1/04*
U.S. Cl. 156—181 **10 Claims**

1. A process for forming discrete, coherent bundles of high modulus polyethylene fibers comprising:

(a) preparing highly oriented, multifilament yarn;

(b) compressing the yarn to deform the individual filaments in cross-section whereby a loosely adhering unitary mass of individual filaments is formed wherein each filament substantially conforms to the deformed shape of the surrounding filaments; and



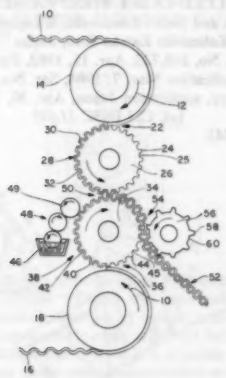
(c) chopping the compressed yarn into bundles of appropriate lengths wherein there is at least partial fusion between the fiber ends during said chopping.

4,483,728

RELIEVED PATTERNED MARRYING ROLL

Robert N. Bauerafeind, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jul. 14, 1980, Ser. No. 168,748
Int. Cl.³ B32B *29/02, 31/08*
U.S. Cl. 156—209 **6 Claims**



1. A method of producing a multi-ply soft absorbent cellulose web comprising the steps of:

(a) embossing first and second separate tissue webs on first and second embossing rolls, said embossing rolls having a pattern of raised embossing areas thereon such that a repeating pattern of projecting land areas and recessed areas is produced on each tissue web;

(b) applying adhesive to said projecting land areas of one of said tissue webs;

(c) aligning said separate tissue webs such that a portion of said projecting land areas of said first tissue web are in contact with a portion of said projecting land areas of said second tissue web, with said recessed areas of said separate tissue webs being spaced apart from one another; and

(d) combining said first and second tissue webs at the location of a combiner nip formed between one of said embossing rolls and a relieved patterned marrying roll, said marrying roll having a discrete pattern of raised surfaces thereon,

whereby, said first and second tissue webs are laminated one to another at the locations where said raised surfaces of said marrying roll contact said points of contact of said projecting land areas of said first and second tissue webs at said combiner nip and said resulting cellulose web is debulked only at said pattern of raised surfaces on said marrying roll.

4,483,729

METHOD OF MANUFACTURING CONTINUOUS FIBER REINFORCED PLASTIC RIMS

Masaru Fujisaki, Tokyo; Tetsuo Tsuchida, Saitama; Yoichi Sasajima, Osaka; Hirohisa Ito, Osaka, and Masahiro Morita, Osaka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo and Sumitomo Electric Industries, Ltd, Osaka, both of, Japan

Filed Dec. 28, 1982, Ser. No. 453,863
Claims priority, application Japan, Jan. 7, 1982, 57-1657
Int. Cl.³ B31F *23/10*
U.S. Cl. 156—222 **12 Claims**

1. A method of manufacturing a continuous fiber reinforced plastic wheel rim for automobiles, motorcycles, or the like, said rim being of the type including a central portion, first and second flange portions adjacent said central portion on either side thereof and first and second bead seat portions adjacent said first and second flange portions, respectively, said method comprising the steps of:

forming a first rim half including said first bead seat portion, said first flange portion and a first part of said central portion and a second rim half including said second bead seat portion, said second flange and a second part of said central portion, each of said first and second rim halves comprising a continuous fiber reinforced plastic;

forming a ring of continuous fiber reinforced plastic; and

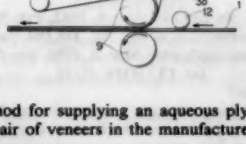
adhesively bonding said first and second rim halves together with said ring to form said wheel rim; wherein said step of forming said first and second rim halves comprises laying a plurality of resin impregnated sheets on one another, each of said sheets having continuous fibers running in at least one direction and the sheets being laid with their continuous fibers running in directions angularly offset with respect to one another so that the said continuous fibers are isotropic around the circumference of the rim and pressing said sheets to form said rim halves.

4,483,730

PLYWOOD MANUFACTURING METHOD AND APPARATUS

Noriyuki Honda, Ohbu, Japan, assignor to Meinan Machinery Works, Inc., Ohbu, Japan

Filed Dec. 14, 1982, Ser. No. 449,758
Claims priority, application Japan, Dec. 30, 1981, 56-210636
Int. Cl.³ B32B *31/00;* **B29C** *25/00;* **B65C** *9/25;* **C09J** *5/00*
U.S. Cl. 156—242 **9 Claims**



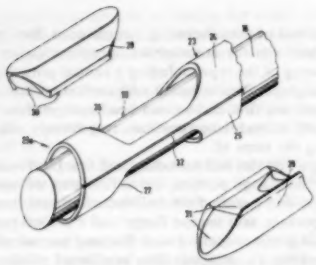
1. A method for supplying an aqueous plywood adhesive between a pair of veneers in the manufacture of a plywood, comprising

(a) applying an aqueous plywood adhesive fluid to a carrier surface travelling in a given direction to form an adhesive fluid film,
(b) drying the adhesive fluid film on the carrier surface to reduce the water content of the film,
(c) stripping the adhesive film from the carrier surface when the adhesive film becomes substantially tacky-dry, and
(d) interposing the adhesive film between a pair of veneers.

4,483,731
METHOD FOR PRODUCING A TUBULAR LOAD-BEARING HOLLOW

Günter Döhle; Michael Kolax, both of Bremen, and Wolfgang Hertel, Ganderkesee, all of Fed. Rep. of Germany, assignors to Vereinigte Flugtechnische Werke GmbH, Bremen, Fed. Rep. of Germany

Filed Mar. 24, 1982, Ser. No. 361,150
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1981, 3113791
Int. Cl.³ B29C *19/00*
U.S. Cl. 156—245 **11 Claims**



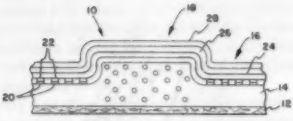
1. A method of making a hollow of fiber-reinforced synthetic and with an internal restriction, comprising the steps of
providing a solid core;
slipping a hose made of an isotropic, elastic material onto said core;
placing preimpregnated fiber material upon the hose and urging the material on the hose against the hose to thereby urge the hose against the core to form an assembly;
placing said assembly into a hollow mold;
removing said core from said hose;
sealing said hose from one end;
pressurizing said hose so that said fiber material is urged against interior walls of the mold;
inserting and positioning die elements into the mold, thereby flattening the hose as well as the fiber material as placed;
curing the impregnated fiber material while said pressure is maintained in said hose; and
removing the completed hollow from the mold.

4,483,732
PROCESS FOR PREPARING HIGH REFLECTIVITY DECORATIVE SURFACE COVERINGS

Vincent L. Penta, Newark; Joseph Boba, Fort Lee; Robert P. Conger, Park Ridge, all of N.J.; Ralph W. Charlton, deceased, late of Rutherford, N.J., and by Phylis M. Charlton, executor, Vero Beach, Fla., assignors to Congoleum Corporation, Kearny, N.J.

Division of Ser. No. 519,892, Aug. 4, 1983, Pat. No. 4,454,188, which is a continuation of Ser. No. 338,184, Jan. 8, 1982, abandoned. This application Mar. 8, 1984, Ser. No. 587,427
Int. Cl.³ B32B *31/18*
U.S. Cl. 156—247 **7 Claims**

1. A method for processing a decorative surface covering having a metallic appearance which comprises coating a backing sheet with a first resinous composition layer, heating to solidify the coating, applying an adhesive in the form of spaced apart discrete dots, squares, or other shapes on the surface of the solidified coating, laminating a metallic film to the adhesive coated surface, adhering the metallic film to the adhesive,

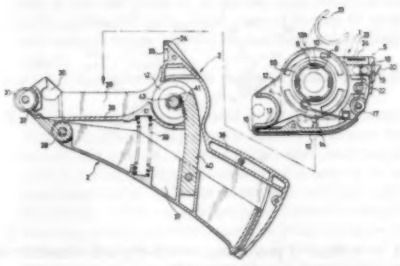


removing the portions of the metallic film not adhering to the adhesive, and applying a transparent or translucent second resinous composition wear layer to said first resinous layer, covering the metal film adhered to the adhesive as well as the unmetalized areas.

4,483,733
ROLLED LABEL STRIP CASSETTE

Yo Sato, Tokyo, and Tadao Kashiwaba, Kitagami, both of Japan, assignors to Kabushiki Kaisha Sato, Japan

Division of Ser. No. 368,732, Apr. 15, 1982, Pat. No. 4,440,592. This application Mar. 7, 1984, Ser. No. 587,282
Claims priority, application Japan, Apr. 30, 1981, 56-66223
Int. Cl.³ B65C *11/00*
U.S. Cl. 156—541 **20 Claims**



12. A rolled label strip cassette for holding a composite label web, the web comprising a series of labels temporarily adhered to a web of backing paper, the cassette comprising:
a frame;
label rolling means on the frame for having the composite label web rolled up thereon;
label delaminating means on the frame and spaced from the label rolling means for delaminating individual labels from the backing paper web; and
a bail supported to the frame of the cassette and being movable between a first position away from the delaminating means and a second position closer to the delaminating means; the bail having a label strip holding portion for engaging the label strip in the second position of the bail for shifting the label strip to make a sharp turn around the delaminating means for aiding in delamination of labels from the backing paper web.

4,483,734

METHOD FOR THE PREPARATION OF SINGLE CRYSTALS OF GADOLINIUM GALLIUM GARNET

Susumu Sakaguchi, Kanagawa; Kazuyoshi Watanabe, Gunma; Masahiro Ogihara, Gunma; Toshihiko Ryuoh, Gunma; Masaaki Iguchi, Gunma, and Norifumi Yoshida, Gunma, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 344,872, Feb. 1, 1982, abandoned. This application Apr. 18, 1983, Ser. No. 485,903

Claims priority, application Japan, Feb. 9, 1981, 56-17826; Mar. 13, 1981, 56-36135

Int. Cl.³ C30B *15/04*

U.S. Cl. 156—605 2 Claims

1. A method for the preparation of a single crystal boule of gadolinium gallium garnet by the Czochralski method which comprises admixing a melt of gadolinium oxide and gallium oxide in a molar proportion of approximately 3:5 with zinc as a dopant element in an amount corresponding to a concentration thereof in the melt of the oxides in an amount of at least 1 p.p.m. by weight based on the weight of the oxide melt and growing a single crystal of gadolinium gallium garnet from the oxide melt.

4,483,735

MANUFACTURING PROCESS OF SEMI-INSULATING GALLIUM ARSENIDE SINGLE CRYSTAL

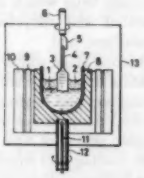
Tomoki Inada; Seiji Mizuniwa; Toshiya Toyoshima; Masashi Fukumoto, and Junkichi Nakagawa, all of Hitachi, Japan, assignors to Hitachi Cable, Ltd., Tokyo, Japan

Filed Mar. 11, 1983, Ser. No. 474,332

Claims priority, application Japan, Mar. 19, 1982, 57-45340

Int. Cl.³ C30B *27/02;* H01L *21/18*

U.S. Cl. 156—607 1 Claim



1. A manufacturing process of a semi-insulating gallium arsenide single crystal wherein the semi-insulating gallium arsenide single crystal is grown by pulling a seed crystal contacted with gallium arsenide melt; said melt being obtained by heat-reacting gallium and arsenic in a crucible contained in a pressure container under pressure controlled at 60 kg/cm² and over during reaction and at 5–40 kg/cm² during crystal growth in high purity inert gas atmosphere; said melt being characteristic in having a film layer of 8–20 mm thickness of melted boron oxide with less than 200 ppm water content being provided over its upper surface; and during said crystal growth, said seed crystal and said crucible being rotated in the same direction, but said seed crystal being rotated 5–30 rpm faster than said crucible; and the crystal growing plane of said seed crystal being controlled to be within ±3° from {100} plane.

4,483,736

METHOD FOR PRODUCING A SINGLE CRYSTAL OF A III_b–V_b COMPOUND

Fumio Orito, Tsuchiura, Japan, assignor to Mitsubishi Monsanto Chemical Co., Ltd., Tokyo, Japan

Filed Mar. 18, 1982, Ser. No. 359,204

Claims priority, application Japan, Mar. 24, 1981, 56-42999; Mar. 24, 1981, 56-43000

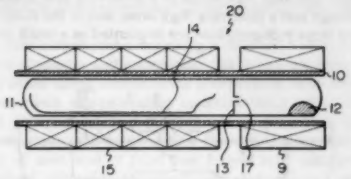
Int. Cl.³ C30B *13/32*

U.S. Cl. 156—616 A 4 Claims

1. A method for producing a single crystal of a III_b–V_b group compound by solidifying a melt of the III_b–V_b compound contained in a boat, in which a single crystal seed of the III_b–V_b compound is placed, comprising:

(a) providing a furnace having a temperature gradient;

(b) placing the boat containing the III_b–V_b compound in the furnace with the seed of the III_b–V_b compound at a point in the furnace within the lower temperature range, of the temperature gradient, and forming a melt of the III_b–V_b compound;



(c) displacing said furnace relative to the boat from the seed, along the boat to grow the crystal;

(d) completing the crystallization at a time when said solid-liquid interface arrives at the end of the boat opposite the seed crystal; and

(e) effecting the furnace displacement in step (c) so that from 40% to 65% of the total melt is crystallized at the time when 30% of the time for completing the crystallization has elapsed.

4,483,737

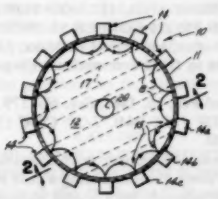
METHOD AND APPARATUS FOR PLASMA ETCHING A SUBSTRATE

Thomas D. Mantei, Cincinnati, Ohio, assignor to University of Cincinnati, Cincinnati, Ohio

Filed Jan. 31, 1983, Ser. No. 462,200

Int. Cl.³ H01L *21/306;* B44C *1/22;* C03C *15/00, 25/06*

U.S. Cl. 156—643 35 Claims



30. A method of etching materials by plasma treatment comprising the steps of:

introducing a gas into a space defined and surrounded by a surface magnetic field;

generating ionizing electrons within said space;

ionizing said gas with said electrons to produce an etching plasma within said space; and

subjecting a material to be etched to said etching plasma within said space in order to etch said material.

4,483,738

METHOD FOR MANUFACTURING BIPOLAR PLANAR TRANSISTORS

Lothar Blossfeld, Freiburg-Hochdorf, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Feb. 3, 1984, Ser. No. 576,866

Claims priority, application European Pat. Off., Feb. 12, 1983, 82101346.1

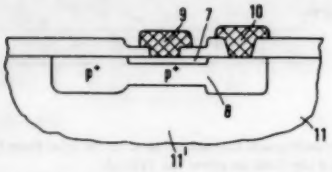
Int. Cl.³ H01L *7/44, 27/02;* B44C *1/22;* C03C *15/00*

U.S. Cl. 156—653 6 Claims

1. A method for manufacturing bipolar planar transistors on

a semiconductor wafer of the n-conductivity type, which is to be divided into the individual planar transistors, in which method the extrinsic base zones are produced by the implantation of p-doping ions, said method comprising the steps of:

covering the emitter areas with oxidation masking layer portions, thereafter depositing a photoresist mask defining the total-base areas thereafter subjecting said wafer to two implantation steps of p-doping ions, whereby in one of said two steps p-doping ions are implanted in the exposed outer extrinsic base areas at a relatively low accelerating voltage and a relatively high dose, and in the other of said two steps p-doping ions are implanted in a small dose into



the exposed extrinsic base areas and into the remaining total-base areas at such a high accelerating voltage that the oxidation masking layer portions covering the emitter areas are penetrated;

removing the photoresist mask;

covering the extrinsic base areas with an etch masking layer which is resistive to the etching of the oxidation masking layer portions;

etching the oxidation masking layer portions;

implanting dopings of the conductivity type of the emitter zones; and

diffusing the base zones and the emitter zones by activating the dopings.

4,483,739

COMPOSITIONS AND METHOD FOR STRIPPING GOLD FROM COPPER SUBSTRATES

Elena H. Too, Nutley, and Daniel R. Marx, Montclair, both of N.J., assignors to OMI International Corporation, Warren, Mich.

Filed Feb. 16, 1984, Ser. No. 579,154

Int. Cl.[3] **C23F** *1/02*; **B44C** *1/22*; **C03C** *15/00, 25/06*

U.S. Cl. 156—656 **15 Claims**

10. The method of stripping gold deposits from a copper substrate which comprises contacting a gold plated workpiece having a copper substrate with a gold stripping composition, having an alkaline pH, for a sufficient period of time to remove the gold from said workpiece at a rate of at least 1 micron per minute without attack on the copper substrate; said stripping composition comprising (a) a ring-substituted nitrobenzoic acid compound, (b) an alkali metal or ammonium cyanide, (c) a lead or bismuth compound, and (d) a mercapto organo compound selected from the group consisting of mercaptobenzothiazoles, mercaptobenzothiazolines, mercaptoimidazoles, mercapto-3-pyridinols, mercaptopyrimidines and mercaptobenzoxazoles.

4,483,740

METHOD FOR RECOVERY OF REUSABLE CHEMICALS FROM $C10_2$ GENERATOR EFFLUENT

John R. Parkinson; Richard E. Fuller, both of Bellevue, Wash., and Bruce Der, Richmond, Canada, assignors to A. H. Lundberg Associates, Inc., Bellevue, Wash.

Filed Aug. 3, 1983, Ser. No. 519,831

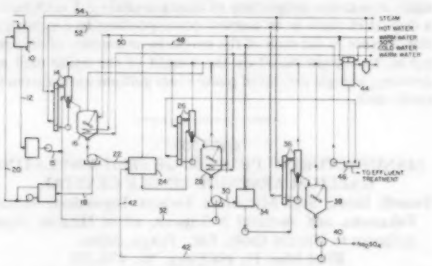
Int. Cl.[3] **B01P** *1/00*

U.S. Cl. 159—47.3 **4 Claims**

1. A closed system method for the recovery of reusable sodium sulfate and sulfuric acid out of the aqueous acidic effluent from the generator of chlorine dioxide comprising the steps of:

a. directing said acidic effluent from the generator for the ClO_2 to a first stage evaporator/crystallizer in which said acidic effluent is heated to yield a weight reduction of a predetermined amount and then cooled to effect crystallization of first stage sodiumn bisulfate crystals which are then separated from the remaining first stage acidic filtrate,

b. recycling the first stage acidic filtrate back to said chlorine dioxide generator and dissolving said first stage sodium bisulfate crystals in H_2O to create a second stage solution for a second stage evaporator/crystallizer and heating said second stage solution to a prescribed temperature under a partial vacuum for a predetermined period of time



to reduce the solution volume and then cooling said solution in the crystallizer to produce second stage sodium sesquisulfate crystals from which the second stage acidic filtrate is separated and recycled to said first stage evaporator/crystallizer, and

c. dissolving said second stage sodium sesquisulfate crystals in water to create a third stage solution for a third stage evaporator/crystallizer and heating said third stage solution to a prescribed temperature under a partial vacuum for a predetermined period of time to reduce the solution volume and then cooling said third stage solution to produce third stage sodium sulfate crystals from which the third stage filtrate is separated and recycled to said second stage evaporator/crystallizer, and wherein said recovered sodium sulfate crystals may be recycled for use in said chlorine dioxide generator.

4,483,741

LOW-FOAMING, PH SENSITIVE, ALKYLAMINE POLYETHER SURFACE ACTIVE AGENTS AND METHODS FOR USING

James E. Maloney, Eagan, and James A. McDonell, St. Paul, both of Minn., assignors to Economics Laboratory, Inc., St. Paul, Minn.

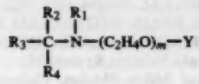
Filed Aug. 10, 1982, Ser. No. 406,885

Int. Cl.[3] **D21C** *5/02*

U.S. Cl. 162—5 **21 Claims**

1. A low foaming repulping method of defibering secondary fiber comprising the steps of:

agitating the secondary fiber in an aqueous repulping medium comprising a surfactant with sufficient base to provide a pH in the range of about 8 to 12 and a temperature in the range of about 80° F. to about 180° F. wherein an aqueous fiber slurry having dispersed and emulsified noncellulosic contaminants is produced wherein the surfactant comprises a foam controllable pH sensitive alkylamine polyether of the structure:



in which

(a) R_1 may be hydrogen or alkyl;

1. when R_1 is hydrogen, then R_2, R_3 and R_4 each must be alkyl having a total number of carbon atoms falling in the range of 7 to 23;
2. when R_1 is alkyl, then R_2, R_3 and R_4 may be alkyl or hydrogen, the total number of carbon atoms in $R_1+R_2+R_3+R_4$ falling in the range of 7 to 36;

(b) the $-(C_2H_4O)_m-$ segment must be a polyoxyethylene homogeneous chain or block polymer, m having an average value in the range of 1 to 15; and

(c) Y is selected from the group consisting of:

1. homogeneous poly(oxypropylene) chain block polymer, of the structure $-(C_3H_6O)_nH$, n having an average value in the range of 1 to 50;
2. hydrophobic end cap;
3. hydrophobic end capped terminated polyoxypropylene block polymer residue.

4,483,742

LIQUID SOAPS COMPRISING PINE OIL AND SOAP-MAKING ACID FOR USE IN PAPER-RECYCLING

Peter F. Bridle, London, England, assignor to SCM Corporation, New York, N.Y.

Filed Feb. 25, 1983, Ser. No. 469,679

Claims priority, application United Kingdom, Jun. 1, 1982, 8215935

Int. Cl.³ C11D *9/00*; D21C *5/02*

U.S. Cl. 162—5 **15 Claims**

1. A liquid soap for use in deinking printed paper stock comprising a partially saponified aqueous composition containing:

(a) 1 part of a mixture of from 10 to 95% terpene alcohol and 90 to 5% terpene hydrocarbon, and

(b) from 1 to 20 parts of a soap-making fatty acid, a glyceride oil or a mixture thereof (all parts and percentages being by weight),

said composition containing less than 20% water and wherein said soap is saponified to an extent of about 50% neutralization.

4,483,743

MICROFIBRILLATED CELLULOSE

Albin F. Turbak, Convent Station; Fred W. Snyder, Wharton, both of N.J., and Karen R. Sandberg, Shelton, Wash., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 313,726, Oct. 22, 1981, Pat. No. 4,374,702, which is a continuation of Ser. No. 107,446, Dec. 26, 1979, abandoned. This application Oct. 18, 1982, Ser. No. 434,724

Int. Cl.³ D21D *1/20*

U.S. Cl. 162—100 **10 Claims**

1. Microfibrillated cellulose prepared by passing a liquid suspension of fibrous cellulose through a high pressure homogenizer having a small diameter orifice in which said suspension is subjected to a pressure drop of at least 3000 psi followed by a high velocity decelerating impact against a solid surface, said microfibrillated cellulose having a water retention value of over 280%, a settling volume after 60 minutes in a 0.5% by weight suspension in water of greater than 60% and a rate of degradation increase by hydrolysis at 60° C. in one molar hydrochloric acord at least twice as great as cellulose beaten to a Canadian Standard Freeness value of 50 ml.

4,483,744

SIZING AGENTS FOR CELLULOSIC PRODUCTS

Ralph W. Emerson, Sr., Boston, Mass., assignor to The Plasmine Corporation, Portland, Me.

Continuation of Ser. No. 165,988, Jul. 7, 1980, abandoned, which is a continuation of Ser. No. 020,480, Mar. 14, 1979, abandoned. This application May 12, 1982, Ser. No. 377,398

Int. Cl.³ D21H *3/34*

U.S. Cl. 162—180 **44 Claims**

1. A process for preparing a sizing composition having improved sizing characteristics, which process comprises combining

(A) a first component comprising a material which provides both ammonia and ammonium salt when combined with the other sizing composition components, said ammonia-ammonium salt-providing material being selected from the group consisting of ammonia or precursor thereof; ammonium salts or precursor thereof; the reaction product of urea and at least one Lewis acid selected from sulfuryl chloride, chlorosulfonic acid, thionyl chloride, benzenesulfonyl chloride, benzenesulfonic acid, ortho-toluenesulfonic acid, para-toluenesulfonic acid, ortho-toluenesulfonyl chloride, and para-toluenesulfonyl chloride; and mixtures of these materials; and

(B) a second component comprising a saponified, partly saponified or unsaponified rosin which is modified with an organic acidic material selected from α,β-unsaturated aliphatic carboxylic acids containing from about 3 to 10 carbon atoms, anhydrides thereof, and mixtures of said acids and anhydrides;

said combining of said first component and said second component being effected by forming sprays of said first component and said second component, wherein each component is formed into particles having an average diameter of about 10 to about 1000 microns, and allowing said sprays to contact each other to thereby provide a sizing composition or precursor thereof, which sizing composition or precursor thereof comprises sizing-effective amounts of said modified rosin, and sizing enhancing amounts of said ammonia and ammonium salt, the amount of said modified rosin, ammonia and ammonium salt being sufficient to provide a sizing composition with a total acidity of at least about 1,000 parts per million.

40. Cellulosic products sized with from about 0.05 to 4 percent by dry weight of the cellulosic product fibers of a sizing composition produced by the process of claim 1.

4,483,745

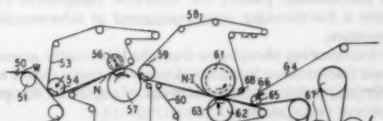
METHOD AND APPARATUS OF SHEET TRANSFER USING A NONPOROUS SMOOTH SURFACED BELT

Laurie D. Wicks, South Beloit; Dennis C. Cronin, and James L. Chance, both of Rockton, all of Ill., assignors to Beloit Corporation, Beloit, Wis.

Filed Sep. 29, 1982, Ser. No. 428,241

Int. Cl.³ D21F *3/04*, *3/00*, *11/00*

U.S. Cl. 162—205 **9 Claims**



6. A mechanism for positive web transfer in a papermaking machine comprising in combination:

means forming a press nip between a first press roll and a second press roll;

a nonporous looped smooth surfaced belt of nonextensible material impervious to water passing through said nip in

direct contact with the surface of the web in supporting relationship thereto;

a porous felt on the other surface of the web passing through the nip and receiving water pressed from the web in the nip;

means carrying the web to the felt and belt;

means guiding the belt away from the nip;

and means receiving the web from the belt and separating the web therefrom.

8. A method of positively transferring a web through a press section of a papermaking machine between first and second press nips each formed of a roll couple comprising the steps:

carrying the web on a nonporous looped smooth surface belt of nonextensible material impervious to water and passing the belt through the nips in direct supporting relationship with the web; and

passing a felt means through each of said nips for receiving water pressed from the web with the felt means being on the side of the web opposite the belt.

4,483,746

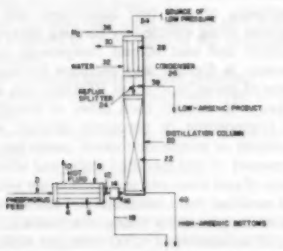
PROCESS FOR PHOSPHORUS PURIFICATION

Harvey Rosenhouse, East Windsor, and Jeffrey C. Dore, Hamilton Square, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Jun. 4, 1982, Ser. No. 385,144

Int. Cl.³ B01D *3/10*

U.S. Cl. 203—91 **8 Claims**



1. A continuous process for reducing the arsenic content of phosphorus comprising:

(A) continuously feeding impure molten phosphorus through a heat exchanger,

(B) heating the impure phosphorus in said heat exchanger to a temperature sufficient to vaporize a portion of the phosphorus, but not above about 200° C.,

(C) continuously removing the heated phosphorus flowing through said heat exchanger and introducing same into a disengaging zone maintained at subatmospheric pressure,

(D) separating phosphorus vapor from phosphorus liquid and any non-volatile impurities in the disengaging zone,

(E) continuously passing the separated phosphorus vapor into a fractionating zone maintained at subatmospheric pressure,

(F) fractionating phosphorus from the less volatile arsenic in said fractionating zone, based solely on vapor/liquid equilibrium, in the substantial absence of any other non-phosphorus vapor streams,

(G) condensing phosphorus vapor rising from the top of said fractionating zone in a condensing zone under subatmospheric pressure to obtain low-arsenic liquid phosphorus,

(H) returning a portion of the condensed liquid phosphorus to the fractionating zone as a reflux stream, and contacting it with upflowing phosphorus vapors,

(I) removing high-arsenic liquid phosphorus from the bottom of the fractionating zone, and

(J) recovering the remaining portion of the condensed low-arsenic liquid phosphorus as product.

4,483,747

MONOMER REMOVAL FROM THE SLURRY OF VINYL CHLORIDE RESIN WITH STEAM BY USING IMPROVED PLATE TOWER

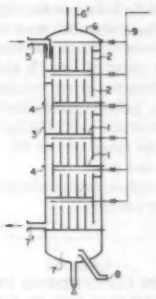
Shiro Aruga; Kazuaki Nakano; Kyuichi Mito; Kei Mukai, all of Minamatashi, and Mikio Shinkai, Chibashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Continuation of Ser. No. 968,097, Dec. 8, 1978, abandoned, which is a continuation of Ser. No. 875,850, Feb. 8, 1978, abandoned. This application Sep. 29, 1981, Ser. No. 306,700

Claims priority, application Japan, Jun. 21, 1977, 52-77480

Int. Cl.³ B01D *3/38;* **C08F** *114/06*

U.S. Cl. 203—92 **4 Claims**



1. A process for removing vinyl chloride monomer obtained by suspension polymerization from an aqueous dispersion of a vinyl chloride resin powder which includes the steps of

(a) introducing said aqueous dispersion into a stripping zone and allowing it to flow downwardly therethrough,

(b) causing the downwardly flowing aqueous dispersion to pass through a series of vertically spaced apart horizontal flow stages,

(c) the aqueous dispersion flowing across each horizontal flow stage being caused to flow along a tortuous channel-like flow path,

(d) establishing a flow of steam upwardly through the aqueous dispersion that flows in a tortuous path through the lowermost horizontal flow stage by introducing steam from beneath and then upwardly through the horizontally flowing aqueous dispersion thereon, and then passing said steam successively through each horizontal flow stage thereabove,

(e) the steam introduced in step (d) being in the form of a large number of spaced apart inlet streams each having a diameter of 0.5 to 2 mm,

(f) the ratio of the total sum of the cross-sectional areas of said steam inlet streams to the cross-sectional area of the horizontally flowing aqueous dispersion through which the steam passes being in the range of 0.0004 to 0.04,

(g) the pressure in said stripping zone being −0.803 to 0.5 kg/cm² based on gauge, the temperature of the aqueous dispersion while flowing through said stripping zone being between 50° and 110° C., and the retention time of the aqueous dispersion in the stripping zone ranging between 1 and 90 minutes.

4,483,748

AUTOMATED MEMBRANE TEST CELL APPARATUS AND METHOD FOR SO USING

Howard L. Yeager, and J. David Malinsky, both of Calgary, Canada, assignors to Olin Corporation, New Haven, Conn.

Filed Sep. 20, 1982, Ser. No. 420,413

Int. Cl.³ G01N *27/28, 27/40*

U.S. Cl. 204—1 T **37 Claims**

1. A method of measuring cationic and water transport

numbers for a selected cation exchange permselective membrane in a test system, said system comprising a test cell, said cell having said membrane sealingly suspended therein to form separate anode and cathode compartments for containing anolyte and catholyte solutions, respectively, and central control means for sequentially controlling the circulation and the temperature of said solutions, generating samples and performing test measurements on said samples to calculate said transport numbers, said method comprising:

(a) preparing a series of anolyte pairs, each member of said pair having the same anolyte concentration, each anolyte pair having a different anolyte concentration from other pairs in said series, one member of each pair containing a preselected amount of radioactive tracer material;

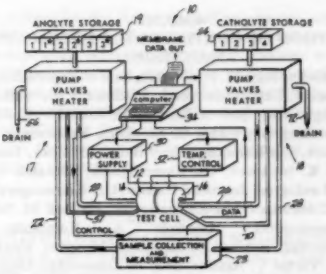
(b) preparing a series of catholytes, each catholyte having a different preselected catholyte concentration from other members of the series;

(c) under the automatic control of said central control means,

(1) conveying a portion of a first anolyte member of a selected anolyte pair to said anode compartment and a portion of a selected first catholyte from said series of catholytes to said cathode compartment, and circulating said first anolyte member and said first catholyte in said cell at a preselected temperature to condition said membrane;

(2) removing said anolyte and catholyte solutions and replacing them with fresh portions of the same anolyte and catholyte solutions used in step c (1);

(3) circulating said fresh portions, heating them to a preselected temperature, while electrolyzing them at a first preselected cell operating amperage for a preprogrammed period of time and at the conclusion of said time, separating a sample of said catholyte solution;



(4) removing said first anolyte member from said anode chamber and conveying to said anode chamber a portion of a second anolyte member from said pair containing radioactive tracer material;

(5) repeating said heating and circulating stage at said first cell preselected operating amperage to electrolyze said anolyte and catholyte solutions for a preselected period of time, said electrolysis producing a transfer of said tracer material from said anode compartment through said membrane into said cathode compartment and at the conclusion of said time, removing said solutions, separating samples, determining the change in the radioactive levels of said tracer in said anolyte and catholyte solution and logging said data;

(6) replacing said solutions with a second portion of the solutions used in step c(1) and circulating and heating said solutions for a second preset period of time to cleanse said membrane of said radioactive tracer;

(7) repeating steps c(2) to c(5) but at a second preselected cell operating amperage;

(8) measuring the net change of water content of the electrolyte in each compartment, said quantities being utilized in calculating the moles of water which have been transferred; and

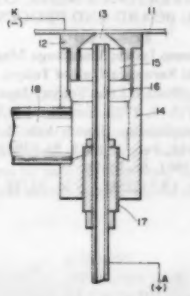
(9) repeating steps c(1) to c(8) until said membrane is tested for each of said pair of anolytes in said series against each anolyte in said series, and calculating water transport numbers and cationic transport numbers for the membrane for each combination of said selected anolytes and said selected catholytes for said first and second preselected current density levels whereby a full set of transport numbers describing the response of said membrane is determined.

4,483,749

METHOD AND APPARATUS FOR PLATING MINUTE PARTS

Koichi Shimamura, Yokohama, Japan, assignor to Sonix Ltd., Kanagawa, Japan

Filed Jun. 28, 1983, Ser. No. 508,659
Claims priority, application Japan, Aug. 10, 1981, 56-125783
Int. Cl.³ C25D *5/02, 5/08, 17/00*
U.S. Cl. 204—15 **6 Claims**



1. A minute part plating method wherein a plating liquid is jetted from a nozzle onto a specific part to be plated of an object to be plated, characterized by comprising a masking means for enclosing the specific part of the object to be plated and setting a plating part, a discharging means for bringing the mask into close contact with the object to be plated to form a sealed space, holding this sealed space under a negative pressure of a predetermined value and discharging the used plating liquid, a plating liquid jetting means for jetting the plating liquid under a predetermined pressure from a nozzle arranged as opposed to the mask within the above mentioned sealed space and a means for making the nozzle an anode and the object to be plated a cathode and setting or adjusting a short distance between the electrodes the distance between electrodes being adjustable from about 0.1 to 2 mm by adjusting the nozzle holder making the nozzle free to rise and fall.

4,483,750

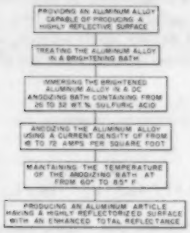
PROCESS FOR ANODIZING HIGHLY REFLECTIVE ALUMINUM MATERIALS

John H. Powers, Lower Burrell, and Hang T. Dang, Pittsburgh, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Mar. 16, 1984, Ser. No. 590,323
Int. Cl.³ C25D *11/04, 11/08*
U.S. Cl. 204—29 **15 Claims**

1. An improved process for the production of aluminum reflector material having a higher total reflectance value, the improvements comprising controlling the anodizing conditions of an aluminum alloy previously subjected to a brightening

process, by immersing the alloy in a DC anodizing bath containing at least 26 wt. % sulfuric acid and anodizing the sheet


PROVIDING AN ALUMINUM ALLOY CAPABLE OF PRODUCING A HIGHLY REFLECTIVE SURFACE
TREATING THE ALUMINUM ALLOY IN A BRIGHTENING BATH
IMMERSING THE BRIGHTENED ALUMINUM ALLOY IN A DC ANODIZING BATH CONTAINING FROM 26 TO 32 WT.% SULFURIC ACID
ANODIZING THE ALUMINUM ALLOY USING A CURRENT DENSITY OF FROM 45 TO 70 AMPS PER SQUARE FOOT
MAINTAINING THE TEMPERATURE OF THE ANODIZING BATH AT FROM 60° TO 85° F
PRODUCING AN ALUMINUM ARTICLE HAVING A HIGHLY REFLECTORIZED SURFACE WITH AN ENHANCED TOTAL REFLECTANCE

at a current density of at least 18 amperes per square foot at a temperature of at least 60° F.

4,483,751

PROCESS OF TREATING A NODIC OXIDE FILM, PRINTED WIRING BOARD AND PROCESS OF MAKING THE SAME

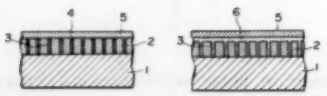
Seizo Murayama; Kazuo Isawa; Masatsugu Maejima; Takayoshi Usuki, and Kohichi Saruwatari, all of Tokyo, Japan, assignors to Fujikura Cable Works, Ltd., Tokyo, Japan

Filed Feb. 1, 1982, Ser. No. 344,711

Claims priority, application Japan, Feb. 2, 1981, 56-13946; Feb. 2, 1981, 56-13943; Feb. 2, 1981, 56-13942; Mar. 11, 1981, 56-13945; Mar. 11, 1981, 56-34974

Int. Cl.³ C25D *11/06, 11/18*

U.S. Cl. 204—37.1 **9 Claims**



1. A process of treating an anodic oxide film, comprising the steps of:

(a) anodizing an aluminum or aluminum alloy base material in an electrolytic solution containing ammonium ions present in a concentration from about 5 to about 80 g/l, at a temperature of about 5° to about 40° C. with a current density in the range of about 0.5 to about 10 A/dm², thereby forming an anodic oxide film thereon, the anodic oxide film having micropores therein;

(b) dissolving a polymerizable organometallic compound in a solvent selected from the group consisting of an organic solvent, water and mixtures thereof, the organometallic compound being represented by the formula:

$$X_nMR_m$$

wherein: X is an organic functional group selected from vinyl, amino, mercapto, epoxy, methyl, and phenyl groups; M is a metallic atom selected from Si, Ti, Zr, Al, B, P, Ge, and Sn; R is a hydrolyzable organic group selected from alkoxy and acetoxy groups; and n+m=3, 4, 5 or 6;

(c) after the step (b), impregnating the anodic oxide film by electrophoresis or electropermeation with the organometallic compound dissolved in the solvent material of step (b); and

(d) polymerizing and hardening the organometallic compound impregnated into the anodic oxide film, thereby filling and sealing the micropores of the anodic oxide film with a polymerized organometallic compound.

4,483,752

VALVE METAL ELECTRODEPOSITION ONTO GRAPHITE

George A. Kline, Birmingham, Mich., assignor to Eltech Systems Corporation, Chardon, Ohio

Filed Sep. 28, 1982, Ser. No. 425,443

Int. Cl.³ C25C *3/26*

U.S. Cl. 204—64 T **13 Claims**

8. A method for electrolytically applying a titanium coating to a graphite substrate to produce a corrosion resistant electrode element for an electrochemical cell comprising the steps of:

(a) in an inerted atmosphere making the graphite substrate cathodic while immersed in a molten alkali or alkaline earth metal salt electrolyte containing titanium in the trivalent state;

(b) initially passing electrical current between a titanium metal anode immersed in said electrolyte and said cathodic substrate at a current density of between 50 and 200 milliamperes per square centimeter measured at the substrate for between 2 and 10 minutes;

(c) then passing electrical current in similar fashion but at a reduced current density of between about 5 and 25 milliamperes per square centimeter until a titanium coating of desired thickness is established upon the substrate; and, after removing the coated substrate,

(d) treating same to eliminate therefrom residual contaminants derived from the alkali or alkaline earth metal salts.

4,483,753

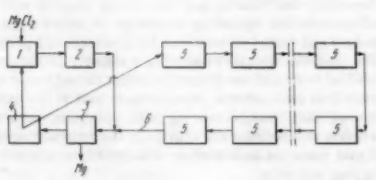
METHOD OF CONTINUOUSLY EXTRACTING MAGNESIUM

Igor V. Zabelin; Jury M. Ryabukhin, both of Zaporozhie; Murat K. Baibekov, Ust-Kamenogorsk; Vladimir N. Devyatkin; Efim A. Kitaigorodsky, both of Zaporozhie; Arnold V. Kolomiitsev, Ust-Kamenogorsk; Viktor G. Sorokous, Zaporozhie; Ilias A. Chalabaev, Ust-Kamenogorsk; Nikolai M. Zuev, Leningrad; Chuken K. Medeuov, Ust-Kamenogorsk; Alexandr S. Chesnokov, Leningrad; Seisanbai Usenov, Ust-Kamenogorsk; Grigory V. Tsidrintsev, Ust-Kamenogorsk; Mikhail M. Nikolaev, Ust-Kamenogorsk; Alexandr A. Kolyadzin, Ust-Kamenogorsk; Boris A. Smorgunov, Moscow; Alexandr V. Chalov; Viktor V. Asafiev, both of Zaporozhie; Oleg V. Ladaria, Leningrad; Vladimir V. Vukolov, Leningrad; Khamat K. Sabirov, Leningrad, and Fedor A. Ivakhno, Zaporozhie, all of U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky I Proektny Institut Titana and UST-Kamenogorsky Titano-Magnievy, both of, U.S.S.R.

Filed Feb. 12, 1981, Ser. No. 233,900

Int. Cl.³ C25C *3/04*

U.S. Cl. 204—70 **4 Claims**



1. A method of continuously extracting magnesium by subjecting chloride electrolytes to electrolysis, which method comprises the steps of: enriching an electrolyte in magnesium chloride and purifying the same,

mixing said enriched electrolyte with a recycled electrolyte containing the metal magnesium extracted in electrolytic cells.

separating the metal magnesium from the resultant electrolyte,

dividing said electrolyte into two flows of which one is fed

to be enriched, while the other is delivered to a bank of electrolytic cells series-connected by conduits,

delivering said recycled electrolyte containing the extracted metal magnesium for mixing with said enriched electrolyte prior to the step of separation, and

accumulating the metal magnesium and withdrawing the same from the process.

4,483,754

ELECTROLYSIS OF SODIUM CHLORIDE WITH THE USE OF ION EXCHANGE MEMBRANES

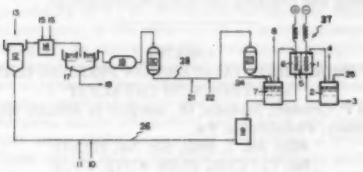
Hiroyuki Shiroki, Nobeoka, Japan, assignor to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 1, 1984, Ser. No. 585,177

Claims priority, application Japan, Mar. 4, 1983, 58-34625

Int. Cl.³ C25B *1/16, 1/26*

U.S. Cl. 204—98 **7 Claims**



1. In a process for the electrolysis of an aqueous solution of sodium chloride derived from raw material salt containing iodine compounds wherein an electric current is passed through said solution in an electrolytic cell separated into an anode chamber and a cathode chamber by a cation exchange membrane, the improvement which comprises reducing the content of iodine in the aqueous sodium chloride solution charged into the anode chamber to a content of less than 1 p.p.m. prior to electrolysis.

4,483,755

METHOD FOR THE TREATMENT OF SURFACES OF A WORKPIECE OF CARBON-CONTAINING CAST IRON

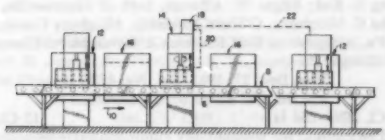
Klaus Heck, Krumenauerstr. 4; Karl Linzenkirchner, Schmellerstr. 2, both of 8070 Ingolstadt; Fritz Indra, Talstr. 25, 8939 Buchloe; Horst Lindner, Silesiusstr. 1, 8070 Ingolstadt, and Hans Munnighoff, Bergstr. 46, 8074 Gaimersheim, all of Fed. Rep. of Germany

Filed May 17, 1982, Ser. No. 379,032

Claims priority, application Fed. Rep. of Germany, May 19, 1981, 3119847

Int. Cl.³ B23P *1/02;* B23B *27/10*

U.S. Cl. 204—129.1 **8 Claims**



1. A method for the treatment of surfaces of a workpiece of carbon-containing cast iron in cast-iron workpieces comprising:

removing electrochemically stock from the surface of a workpiece;

mechanically treating said surface;

said electrochemical stock removing step and mechanical treating step being carried out in at least two separate steps whose operating parameters are independently adjustable; and

said mechanical treating step including reaming-and-plating of said surface substantially without closing of graphite flakes.

4,483,756

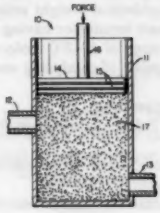
METHOD OF APPLYING ELECTRICAL ENERGY TO A REACTANT CHAMBER

Frank E. Lowther, Chatsworth, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Sep. 27, 1982, Ser. No. 423,917

Int. Cl.³ C04B *35/00*

U.S. Cl. 204—155 **5 Claims**



1. A method for applying electrical energy within a reactant chamber, said method comprising:

positioning a piezoelectric material in said reactant chamber which produces electrical energy when excited; and

applying a stress to said piezoelectric material to thereby apply electrical energy within said reactant chamber.

4,483,757

PHOTOCHEMICAL PROCESS FOR PREPARING AMINES

David M. Gardner, Worcester, and Paul J. McElligott, Abington, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 333,941, Dec. 23, 1981, Pat. No. 4,459,191, which is a continuation-in-part of Ser. No. 259,731, May 1, 1981, abandoned, which is a continuation-in-part of Ser. No. 143,989, Apr. 28, 1980, abandoned. This application Apr. 19, 1984, Ser. No. 601,831

Int. Cl.³ B01J *19/12*

U.S. Cl. 204—158 R **11 Claims**

1. A process for producing amines comprising reacting in the liquid phase ammonia or a primary or secondary amine with an olefin having one or more non-aromatic carbon to carbon double bonds in the presence of actinic light having an emission spectrum beginning above 160 nm and in contact with ammonium iodide or bromide photocatalyst whereby an N—H bond of the ammonia or amine is added across the double bond of the olefin.

4,483,758

METHOD FOR MAKING A NEGATIVE WORKING LITHOGRAPHIC PRINTING PLATE

William Rowe, Westfield, N.J.; Eugene Golda, Monsey, and Alan Wilkes, Brewster, both of N.Y., assignors to Polychrome Corporation, Yonkers, N.Y.

Division of Ser. No. 342,333, Jan. 25, 1982, Pat. No. 4,447,512. This application Jan. 30, 1984, Ser. No. 574,808

Int. Cl.³ G03C *1/71;* C08F *8/00*

U.S. Cl. 204—159.14 **7 Claims**

1. A radiation sensitive, negative-acting esterified resin reaction product of about one equivalent of an O-epoxyalkylated tetrakis (hydroxyphenyl) alkane resin and less than one equivalent of an ethylenically unsaturated acid.

4,483,759

ACTINIC RADIATION CURED POLYURETHANE ACRYLIC COPOLYMER

Michael Szycher, Lynnfield; Donald J. Dempsey, Billerica, and Jonathan L. Rolfe, North Easton, all of Mass., assignors to Thermedics, Inc., Woburn, Mass.

Filed Jul. 2, 1982, Ser. No. 394,537
Int. Cl.³ C08F 2/50; C08G 18/67
U.S. Cl. 204—159.24 **4 Claims**

1. A process for forming a polyurethane acrylic composition comprising:

(A) providing reactants comprising:

(1) a diisocyanate;

(2) a glycol having a molecular weight between the range of 500–5,000 molecular weight units;

(3) an acrylyl chain terminator having a molecular weight between the range of 40–200 molecular weight units;

(4) a catalyst capable of catalyzing urethane bond formation; and

(5) a photosensitizer; and

wherein there are 2 diisocyanate units for each glycol unit; and

there is only one acrylyl group terminator at each end of the polyurethane chain;

(B) mixing the reactants to form a reactive mixture;

(C) degassing the reactive mixture to remove entrained air; and

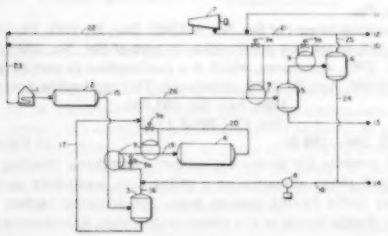
(D) actinic radiation curing the reactive mixture to form a polyurethane composition.

4,483,760

PROCESS FOR DEWAXING MIDDLE DISTILLATES

Samuel A. Tabak, Wenonah, and Robert E. Holland, Mullica Hill, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 30, 1983, Ser. No. 509,828
Int. Cl.³ C10G 69/10
U.S. Cl. 208—60 **10 Claims**



7. A process for catalytically dewaxing a petroleum distillate feed boiling within the range of about 500° F. to about 1050° F., which comprises:

contacting said feed and hydrogen gas under dewaxing conditions in a first reactor with a first crystalline aluminosilicate catalyst having a Constraint Index of 1 to 12 and a silica to alumina ratio of at least 12 thereby forming a dewaxed fuel oil and a by-product fraction that contains olefins, said fraction boiling up to about 415° F. and containing more than about 40 wt% of hydrocarbons boiling in the C_5 to 415° F. range;

separating said by-product fraction and hydrogen from said dewaxed fuel oil;

cascading said separated by-product fraction and hydrogen to a second reactor wherein it is converted with a second crystalline aluminosilicate zeolite catalyst having a Constraint Index of 1 to 12 and a silica to alumina ratio of at least 12, said conversion being conducted under a combination of reaction conditions effective to increase the aromatic hydrocarbon content of said by-product fraction by from at least 5.5 wt% to about 65 wt%; and

recovering fuel oil and gasoline from said converted by-product fraction.

4,483,761

UPGRADING HEAVY HYDROCARBONS WITH SUPERCRITICAL WATER AND LIGHT OLEFINS

Stephen C. Paspek, Jr., North Royalton, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

Filed Jul. 5, 1983, Ser. No. 510,524
Int. Cl.³ C10G 9/00
U.S. Cl. 208—106 **19 Claims**

19. In a process for upgrading and cracking heavy hydrocarbons where the heavy hydrocarbons are contacted with a cracking medium at the critical temperature and pressure of the medium, the improvement comprising adding to the medium olefins containing five or less carbon atoms prior to upgrading and cracking the heavy hydrocarbons.

4,483,762

HYDROCARBON CONVERSION PROCESS USING MOLYBDENUM CATALYST

Martin P. Grosboll, Mokena, Ill., assignor to Atlantic Richfield Company, Philadelphia, Pa.

Filed Jul. 7, 1983, Ser. No. 511,619
Int. Cl.³ C10G 45/04, 47/12, 47/14
U.S. Cl. 208—108 **17 Claims**

1. A process for hydroconverting a hydrocarbon chargestock comprising:

(a) combining said chargestock and a minor, effective amount of at least one molybdenum compound prepared by a method which comprises interacting molybdenum metal with at least one peroxy compound in the presence of at least one saturated alcohol having from one to four carbon atoms per molecule to solubilize at least a portion of the molybdenum metal;

(b) contacting said molybdenum compound within said chargestock in the presence of a gas selected from the group consisting of a hydrogen-containing gas, a hydrogen sulfide-containing gas, and a gas comprising hydrogen and hydrogen sulfide, at conditions to produce a solid catalyst within said chargestock capable of promoting the hydroconversion of at least a portion of said chargestock;

(c) contacting said chargestock containing said catalyst with hydrogen hydroconversion conditions to hydroconvert at least a portion of said chargestock; and

(d) recovering a hydroconverted hydrocarbon product.

4,483,763

REMOVAL OF NITROGEN FROM A SYNTHETIC HYDROCARBON OIL

Myong S. Kuk; Edgar W. Albaugh, both of Monroeville, and John C. Montagna, O'Hara Township, Allegheny County, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Dec. 27, 1982, Ser. No. 453,715
Int. Cl.³ C10G 67/04, 67/08
U.S. Cl. 208—254 H **10 Claims**

1. The method for substantially eliminating nitrogen from a synthetic hydrocarbon oil which comprises the steps:

(a) subjecting the nitrogen compounds in a synthetic hydrocarbon oil to partial hydrogenation at suitable conditions for hydrogenation and in the presence of hydrogen and a hydrogenation catalyst whereby a substantial portion of the nitrogen compounds are hydrogenated, and

(b) contacting the partially hydrogenated oil with a multicomponent extractant solution comprising at least about 50 weight percent of an organic polar solvent selected from the group consisting of γ-butyrolactone and furfuryl alcohol, between about 0.5 and about 15 weight percent of a mineral acid or a carboxylic acid, and water in a weight

ratio of water to said acid of up to about 10:1, whereby a substantial portion of the remaining nitrogen compounds are removed from the oil.

4,483,764

HYDROCARBON CONVERSION PROCESS

Albert L. Hensley, Jr., Munster, Ind.; Jeffrey T. Miller, Naperville, Ill.; Thomas D. Nevitt, Naperville, Ill., and A. Martin Tait, Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 320,866, Nov. 13, 1981, Pat. No. 4,460,698. This application Oct. 27, 1983, Ser. No. 545,903

Int. Cl.³ C10G *11/05, 45/12, 47/20*

U.S. Cl. 208—111 **2 Claims**

1. A hydrocarbon conversion process comprising contacting a chargestock comprising whole petroleum, shale oil, tar sand oil, coal and biomass liquids and fractions thereof, under hydrocarbon conversion conditions comprising a temperature of 350° F. to 850° F., a hydrogen pressure of 100 to 3,000 psig and a space velocity of 0.1 to 10 volumes of feed per volume of catalyst per hour, in the presence of a catalytic composition comprising (1) an active metallic component comprising at least one metal having hydrocarbon conversion activity and at least one oxygenated phosphorus component, and (2) a support component comprising at least one non-zeolitic, porous refractory inorganic matrix component and at least one crystalline molecular sieve zeolite component comprising a crystalline borosilicate zeolite or a crystalline aluminosilicate zeolite selected from the group consisting of ultrastable Y crystalline aluminosilicate zeolites and Y crustalline aluminosilicates in acid form or mixtures thereof.

4,483,765

OIL-DISPERSIBLE ANTIMONY OXIDE SOL DISPERSED AS AN OIL IN WATER EMULSION INTO A CRACKING FEED

Charles C. Payne, Aurora, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Jun. 27, 1983, Ser. No. 508,370

Int. Cl.³ C10G *11/05;* **B01J** *29/38, 13/00*

U.S. Cl. 208—120 **1 Claim**

1. In a process wherein the activity of metal contaminated molecular sieve cracking catalysts contained in a fluid catalytic cracking unit are restored by treating these catalysts with an activity improving amount of antimony oxide which is added to a hydrocarbon stream fed to the fluid catalytic cracking unit and then heating the thus treated catalyst in the presence of a free oxygen containing gas to an elevated temperature whereby the activity of the catalyst is improved, the improvement which comprises using as the source of antimony oxide an oil-in-water emulsion of an aqueous antimony sol which has been uniformly dispersed into a hydrocarbon stream feed to the catalytic cracking unit.

4,483,766

PROCESS FOR CATALYTIC REFORMING

Robert B. James. Jr., Northbrook, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jun. 20, 1983, Ser. No. 506,184

Int. Cl.³ C10G *35/04*

U.S. Cl. 208—134 **15 Claims**

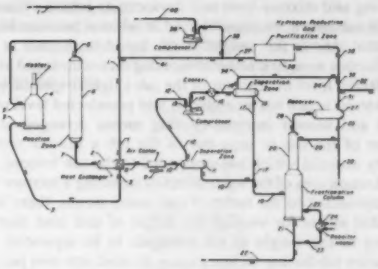
1. An improved process for catalytic reforming comprising the steps of:

(a) admixing substantially pure hydrogen with a naphtha boiling range feedstock;

(b) contacting the resulting admixture with a reforming catalyst at catalytic reforming conditions in a catalytic reaction zone;

(c) withdrawing a reaction zone effluent and passing the effluent to a vapor-liquid equilibrium separation zone to produce a hydrogen-containing vapor phase and a liquid hydrocarbon phase comprising unstabilized reformate;

(d) passing at least a portion of the hydrogen-containing vapor phase to a hydrogen production/purification zone and reacting it therein to produce substantially pure hydrogen; and,



(e) recycling at least a portion of the substantially pure hydrogen for admixture with the naphtha boiling range feedstock pursuant to step (a) above.

4,483,767

CATALYTIC REFORMING WITH A PLATINUM GROUP AND PHOSPHORUS-CONTAINING COMPOSITION

George J. Antos, Bartlett, and Tai-Hsiang Chao, Des Plaines, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 408,544, Aug. 16, 1982, Pat. No. 4,463,104, which is a continuation-in-part of Ser. No. 324,302, Nov. 23, 1981, Pat. No. 4,367,137, which is a continuation of Ser. No. 212,780, Dec. 4, 1980, abandoned. This application Apr. 9, 1984, Ser. No. 598,111

Int. Cl.³ C10G *35/085*

U.S. Cl. 208—138 **6 Claims**

1. A process for converting hydrocarbons which comprises contacting the hydrocarbons at reforming conditions with a catalyst made by the method of

(a) compositing a platinum group component with a porous support material,

(b) contacting the composite from step (a) with phosphorus or a compound of phosphorus at a temperature less than 700° F. so that the phosphorus to platinum group component atomic ratio is greater than 0.5, and

(c) then reducing the composite from step (b) without an intermediate oxidation step.

4,483,768

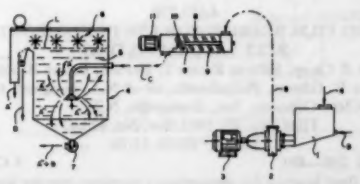
APPARATUS FOR SEPARATING MATERIALS OF SMALL SIZE

Domenico Gazzoni, Como, Italy, assignor to Sorema S.r.l., Como, Italy

Continuation-in-part of Ser. No. 083,761, Oct. 11, 1979, abandoned, which is a continuation of Ser. No. 916,726, Jun. 19, 1978, abandoned. This application May 11, 1981, Ser. No. 262,787

Int. Cl.³ B03B *5/62*

U.S. Cl. 209—18 **5 Claims**



1. An apparatus for separating materials of a small size,

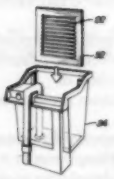
comprising a mixing device fed with said materials and a conveying liquid to produce a mixture thereof, a separation tub which can be filled up to a preselected level with a liquid equal to said conveying liquid, variable-delivery pump means for pumping said mixture from said device to an introduction area of said tub below said preselected level at a pressure higher than that due to the weight of the liquid in the tub at said introduction area, first material-ejecting means arranged at said preselected level to urge out of the tub a lighter specific gravity material which has ascended to said preselected level of the liquid and second material-ejecting means arranged at the bottom of the tub to urge out of the tub a heavier specific gravity material which has descended to the tub bottom, said introduction area of the separation tub including a mixture inlet duct connected to the outlet of said pump means, there being provided means for varying the height of said inlet duct according to the weight of the materials to be separated, said separation tub having its inner space divided into two parts by a partitioning wall extending downwards from the top of the tub before said inlet tub, said parts of the tub space being provided with respective light material ejecting means for urging out respective light materials of different specific gravities ascended to said preselected level of the liquid upstream and downstream of said partitioning wall, respectively.

4,483,769

FILTER CARTRIDGE

Robert M. Sherman, Granada Hills, Calif., assignor to Aquaria, Inc., Chatsworth, Calif.

Filed Jan. 13, 1983, Ser. No. 457,760
Int. Cl.³ B01D *25/06*
U.S. Cl. 210—282 **11 Claims**



1. A filter device comprising:

a substantially planar back structure having a plurality of integrally formed pockets opening to a first side thereof, each pocket having one or more openings to enable fluid to flow through the back structure;

a plurality of granules of filter material disposed in the pockets, wherein the granules are larger than the openings; and

a porous filter element secured to the first side of the back structure, said filter element covering the pockets and retaining the granules of filter material between the back structure and the filter element, said filter device enabling a substantially uniform distribution of filter material granules to be maintained across the surface of the back structure.

4,483,770

FLUID FILM BEARING FOR USE IN HORIZONTAL BELT VACUUM FILTERS

Francis J. Casey, Edison; Ernest T. DePass, Bound Brook, and Kevin R. Gilman, Pequannock, all of N.J., assignors to Enviro-Clear Company, Inc., Somerville, N.J.

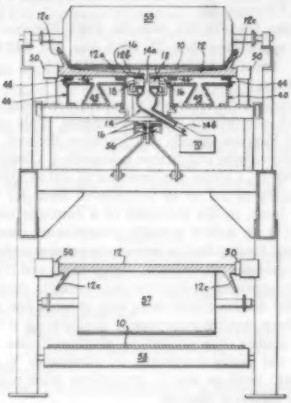
Filed Sep. 27, 1982, Ser. No. 423,627
Int. Cl.³ B01D *33/04*
U.S. Cl. 210—401 **5 Claims**

2. A fluid bearing for supporting a member moving longitudinally therealong, comprising:

(a) box means, having a flat upper surface with a centrally disposed longitudinal opening therein, for communicating a fluid under pressure upwardly therefrom;

(b) chamber means in said box means extending along and communicating with said opening for receiving fluid under pressure and communicating it to said opening, and

(c) guide means disposed along the upper edges of said box means for forming a substantially fluid tight chamber in combination with said flat upper surface and the underside



of a moving member, said guide means comprising two L-shaped members, and fastening means for connecting said L-shaped members respectively to a pair of spaced upstanding side walls of said box means, one leg of each of said L-shaped members being in a plane parallel to said moving member, whereby a fluid cushion bearing is formed for supporting said underside of said moving member.

4,483,771

MULTI-LAYER FILTER

Elizabeth Koch, 16 Edward St., Demarest, N.J. 07627

Filed Aug. 8, 1983, Ser. No. 521,266
Int. Cl.³ B01D *25/08*
U.S. Cl. 210—490 **18 Claims**

1. A multilayer filter combination, comprising

a macrofilter layer having a predetermined thickness and two major sides, said macrofilter layer including porous material impregnated with bacteria-destroying medication and having pore sizes in the range from about 1 micron to about 120 microns, and

a microfilter layer having a prearranged thickness smaller than said predetermined thickness, and including a porous membrane having pore sizes from about 0.1 micron to about 10 microns, said microfilter layer being mechanically bonded to at least a major side of said macrofilter layer, whereby transfer of any remaining live bacteria which may have survived exposure to said bacteria-destroying medication, and which may attempt to pass outwardly beyond said microfilter layer is inhibited.

4,483,772

PROCESS FOR TREATING AQUEOUS EFFLUENTS

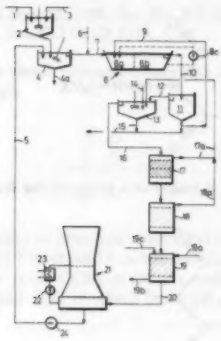
Dietrich Rolke, Hofheim; Hans Hitzel, Dietzenbach, both of Fed. Rep. of Germany, and Andries Brink, Sasolburg, South Africa, assignors to Metallgesellschaft AG, Frankfurt am Main, Fed. Rep. of Germany and Sasol One (Proprietary) Limited, Sasolburg, South Africa

Continuation of Ser. No. 304,142, Sep. 21, 1981, abandoned. This application Oct. 19, 1983, Ser. No. 543,216

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1980, 3036123; Mar. 14, 1981, 3109848

Int. Cl.³ B01D *53/02*

U.S. Cl. 210—601 13 Claims



1. In a process for the treatment of an aqueous effluent obtained from the condensation of a gas derived from coal gasification, from a coal based chemical plant or from a coal liquification plant, said effluent containing ammonium ions and the anions SO_4^{--}, SCN^-, NO_3^-, Cl^- and F^- in a combined concentration of at least 2 mval per liter, an organic contamination corresponding to a chemical oxygen demand of at least 1000 mg/l, and alkalimetal ions, and which comprises the steps of:

(A) subjecting said effluent to a biological purification including nitrification at a pH value of 6 to 8 in the presence of an oxygen containing gas and a sludge in a biological treating zone,

(B) the effluent from step A being subjected to clarification, flocculation and filtration, the effluent withdrawn from said filtration having a fluoride ion content per liter of not more than 100 mg and a chemical oxygen demand of not more than 200 mg and also containing the strong anions F^-, Cl^-, NO_3^- and SO_4^{--},

(C) subjecting said effluent withdrawn from said filtration to an anion exchange in the presence of a weakly basic anion exchanger and exchanging a predominant part of said strong anions against HCO_3 ions, the effluent from said anion exchange being water containing CO_3 and HCO_3 ions, and

(D) at least a part of said water, having a combined concentration of CO_3 and HCO_3 ions of at least 200 mg/l in the form of alkali carbonate and alkali hydrogen carbonate, being mixed with said effluent to be treated in said biological treating zone or upstream of said zone.

4,483,773

NARROW BORE MICRO-PARTICULATE COLUMN PACKING PROCESS AND PRODUCT

Frank J. Yang, Danville, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Continuation of Ser. No. 432,470, Oct. 4, 1982, abandoned. This application Apr. 30, 1984, Ser. No. 604,412

Int. Cl.³ B01D *15/08*

U.S. Cl. 210—656 17 Claims

SELECT FLEXIBLE COLUMN OF DIAMETER < 500 μm
FIT END OF COLUMN WITH RESTRICTOR
PREPARE SLURRY OF MOBILE SOLVENT AND PARTICLES OF DIAMETER 3 μm-10 μm FOR HPLC 3 μm-100 μm FOR GC
INCREASE PRESSURE TO INITIAL PRESSURE
FLOW SLURRY THROUGH COLUMN AT INITIAL PRESSURE
INCREASE FROM INITIAL TO MAXIMUM PRESSURE
HOLD MAXIMUM PRESSURE
REDUCE PRESSURE GRADUALLY

1. A process for slurry packing a narrow bore column with inner diameter less than 0.5 mm, comprising the steps of:

selecting a column having an inner diameter less than 0.5 mm, said column having an exit end;

preparing a slurry from a mobile solvent and a packing material;

plugging said exit end with an end restrictor which permits said mobile solvent to flow therethrough, but which restricts the passage of said packing material;

causing said slurry to flow through said column under pressure in the following manner:

applying an initial pressure and maintaining said initial pressure for an initial period until said column is filled up to form a bed;

raising the pressure from said initial pressure to a maximum pressure; and

maintaining said maximum pressure for a second period.

4,483,774

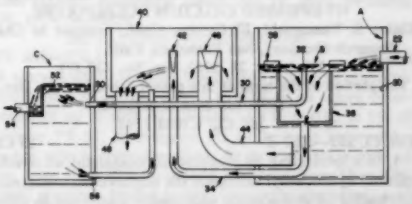
OIL CONCENTRATING METHOD AND APPARATUS

Eugene L. Brill, deceased, late of Broadview Heights, Ohio, and by Beatrice Brill, administrator, 1803 W. Royalton Rd., Broadview Heights, Ohio 44147

Filed Mar. 16, 1984, Ser. No. 590,147

Int. Cl.³ C02F *1/40*; B01D *21/26*

U.S. Cl. 210—788 20 Claims



1. An apparatus for automatically and continuously and decanting a layer of a lighter fluid which is floating upon a heavier fluid, the apparatus comprising:

a fluid inlet for discharging lighter and heavier fluids into a basin in such a manner that the rate of discharged fluid causes a corresponding rotation of fluid within the basin, the lighter and heavier fluids received in the basin tending to separate with the lighter fluid rising and forming and floating layer upon the heavier fluid;

a lighter fluid removal tube having an inlet positioned in the basin for receiving a lighter fluid concentrated fluid flow, the lighter fluid removal tube being operatively connected with an automatic, continuous decanting means in such a manner that the concentrated fluid flows to the decanter at the urging of a pressure differential between the lighter fluid removal tube inlet and the automatic, continuous decanter means, the pressure differential being caused by one of (a) gravity attributable to a difference in altitude between the inlet and the decanter means and (b) an artificially created pressure differential within the decanter, the concentrated fluid flow being limited in rate by the bore of the lighter fluid removal tube;

the automatic, continuous decanter means separating the heavier fluid from the lighter fluid at a rate which is greater than the maximum concentrated fluid flow rate through the lighter fluid removal tube;

a heavier fluid withdrawing tube positioned in the basin for removing heavier fluid therefrom, the heavier fluid withdrawing tube having an inlet disposed generally below the lighter fluid removal tube inlet such that removal of virtually the entire flow of heavier fluid serves the dual purpose of transporting the floating layer of lighter fluid toward the lighter fluid removal tube inlet and of establishing a free vortex which is reinforced by the flow of lighter fluid into the lighter fluid removal tube in order to draw the floating lighter liquid into the lighter fluid removal tube;

a heavier fluid removal flow rate control means for controlling a rate of heavier fluid flow through the heavier fluid withdrawing tube, the heavier fluid removal flow rate control means including an opening with upward divergent sides operatively connected with the heavier fluid withdrawing tube for controlling the rate of heavier flow from the basin at a rate that maintains the depth of the lighter fluid removal tube inlet below the lighter fluid surface generally in direct proportion to the square root of the circulation of the fluid mass within the basin in such a manner that a constant diameter of lighter fluid is maintained surrounding an eye of the free vortex disposed at the lighter fluid removal tube inlet, whereby the concentrated fluid flow passing to the decanter maintains a substantially constant lighter fluid portion even as fluid flow into the basin fluctuates; and,

a means for maintaining a liquid surface level at a point immediately downstream from the heavier fluid removal flow rate control opening.

4,483,775

LUBRICATING OIL COMPOSITIONS CONTAINING OVERBASED CALCIUM SULFONATES

Elaine S. Yamaguchi, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Oct. 28, 1982, Ser. No. 437,371

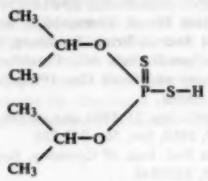
The portion of the term of this patent subsequent to Dec. 22, 1998, has been disclaimed.

Int. Cl.³ C10M *1/48*

U.S. Cl. 252—32.7 E **13 Claims**

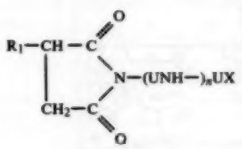
1. In a lubricating oil composition containing an overbased calcium hydrocarbyl sulfonate, the improvement wherein said lubricating oil composition additionally comprises an effective amount to reduce wear of an oil soluble complex prepared by reacting at about 25° C. to 180° C.

(a) an insoluble metal salt of a diisopropyl dithiophosphoric acid of the formula:

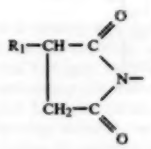


wherein the metal of said metal salt is selected from the group consisting of a Group I metzl, a Group II metal, aluminum, tin, cobalt, lead, molybdenum, manganese or nickel; with

(b) an oil soluble alkenyl or alkyl mono- or bis-succinimide of the formula



wherein X is amino or a group of the formula



R_1 is an alkenyl or alkyl group containing from about 20 to 300 carbon atoms, U is alkylene containing 2 to 6 carbon atoms, n is an integer of from 0 to 6;

wherein the weight of ratio of (b) to (a) is at least in the range of from 3:1 to 10:1.

4,483,776

LITHIUM COMPLEX SOAP THICKENED GREASE CONTAINING CALCIUM ACETATE

Arnold C. Witte, Jr., Port Neches; Aubrey L. Stone, Beaumont, and Patrick F. Woloszyn, Galveston, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jun. 17, 1983, Ser. No. 505,507

Int. Cl.³ C10M *5/14, 5/16*

U.S. Cl. 252—40 **10 Claims**

1. A grease composition characterized by having a relatively constant viscosity over a temperature range of from about 200° F. to 500° F. comprised of a major amount of a lubricating oil and from about 15 to 35 weight percent based on the said grease composition of a mixture of calcium acetate and lithium complex soaps, said mixture consisting of calcium acetate and lithium complex soap in 1.2:1 to 1.7:1 weight ratio respectively.

4,483,777

STABILITY IMPROVERS FOR WATER-IN-OIL EMULSION

Joosup Shim, Wenonah, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 20, 1982, Ser. No. 419,877

Int. Cl.³ C10M *1/06*

U.S. Cl. 252—49.5 **1 Claim**

1. In a fire-resistant, water-in-oil emulsion comprising about 40 to about 80% by weight of an oil of lubricating viscosity,

from about 10 to less than about 50% by weight of water and a minor emulsifying amount of an emulsifier/stabilizer package, the improvement comprising a water-in-oil emulsion further containing a minor emulsifying amount of a coemulsifier, polyethoxylated soya amine.

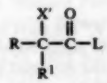
4,483,778

PEROXYGEN BLEACH ACTIVATORS AND BLEACHING COMPOSITIONS

James E. Thompson, and Charles D. Broaddus, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 22, 1983, Ser. No. 564,786
Int. Cl.³ C11D 7/38, 7/54
U.S. Cl. 252—94 24 Claims

1. A peroxygen bleach activator comprising a compound of the general formula



where R is a straight or branched chain alkyl or alkenyl containing from about 4 to about 14 carbon atoms, R^1 is H, CH_3, C_2H_5 or C_3H_7, X' is Cl, OCH_3 or OC_2H_5, and L is a leaving group the conjugate acid of which has a pK_a of about 4 to about 30.

4,483,779

DETERGENT COMPOSITIONS COMPRISING POLYGLYCOSIDE AND POLYETHOXYLATE SURFACTANTS AND ANIONIC FLUORESCER

Ramon A. Llenado, West Chester, and Denzel A. Nicholson, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 371,692, Apr. 26, 1982, , which is a continuation-in-part of Ser. No. 306,562, Sep. 28, 1981, abandoned. This application Jun. 13, 1983, Ser. No. 503,935
Int. Cl.³ C11D 3/22, 3/42
U.S. Cl. 252—135 9 Claims

1. A detergent composition comprising:

(A) from about 1% to about 90% of an alkylpolysaccharide detergent surfactant of the formula $RO(R'O)_y(Z)_x$ where R is an alkyl, hydroxy alkyl, alkyl phenyl, hydroxy alkyl phenyl, alkyl benzyl, or mixtures thereof, said alkyl groups containing from about 8 to about 18 carbon atoms; where each R' contains from 2 to about 4 carbon atoms and y is from 0 to about 12; and where each Z is a moiety derived from a reducing saccharide selected from the group consisting of glucose, galactose and mixtures thereof, and x is a number from about 1½ to about 3;

(B) from about 1% to about 90% of a nonionic detergent surfactant;

(C) from 0% to about 90% of a detergency builder, the ratio of (A) to (B) being from about 1:1 to about 10:1, and

(D) from about 0.01% to about 2% of an anionic optical brightener.

4,483,780

DETERGENT COMPOSITIONS CONTAINING POLYGLYCOSIDE AND POLYETHOXYLATE DETERGENT SURFACTANTS

Ramon A. Llenado, West Chester, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 371,691, Apr. 26, 1982, abandoned, which is a continuation-in-part of Ser. No. 306,640, Sep. 28, 1981, abandoned. This application Jun. 13, 1983, Ser. No. 503,936
Int. Cl.³ C11D 3/075, 3/22
U.S. Cl. 252—135 16 Claims

1. A detergent composition comprising:

(A) from about 1% to about 90% of an alkylpolysaccharide detergent surfactant of the formula $RO(R'O)_y(Z)_x$ where R is an alky, hydroxy alkyl, alkyl phenyl, hydroxy alkyl phenyl, alkyl benzyl, or mixtures thereof, said alkyl groups containing from about 8 to about 18 carbon atoms; where each R' contains from 2 to about 4 carbon atoms and y is from 0 to about 12; and where each Z is a moiety derived from a reducing saccharide selected from the group consisting of glucose, galactose and mixtures thereof, and x is a number from about 1½ to about 3;

(B) from about 1% to about 90% of a polyethoxylate nonionic detergent surfactant; and

(C) from 0% to about 90% of a detergency builder, the ratio of (A) to (B) being from about 1:3 to about 10:1.

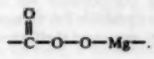
4,483,781

MAGNESIUM SALTS OF PEROXYCARBOXYLIC ACIDS

Frederick A. Hartman, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sep. 2, 1983, Ser. No. 529,072
Int. Cl.³ C11D 7/38, 7/54, 3/395; C07C 179/10
U.S. Cl. 252—174.12 20 Claims

1. Stable solid organic oxidizing compound comprising the group



4,483,782

DETERGENT COMPOSITION CONTAINING A MICROBIAL HETEROPOLYSACCHARIDE STABILIZING AGENT

Roger B. Cox, Reading, and David C. Steer, Wirral, both of England, assignors to Lever Brothers Company, New York, N.Y.

Division of Ser. No. 331,705, Dec. 16, 1981, , which is a division of Ser. No. 166,220, Jul. 7, 1980, Pat. No. 4,329,448. This application Aug. 23, 1982, Ser. No. 410,772
Claims priority, application Japan, Jul. 10, 1979, 54-24040; Dec. 20, 1979, 54-43878
Int. Cl.³ C11D 7/26; C08B 37/00
U.S. Cl. 252—174.17 1 Claim

1. A storage stable aqueous, built liquid detergent composition comprising by weight from 1 to 60% of an active detergent material, up to 60% of a builder and from 0.05 to 1% of Biopolymer PS 87, Biopolymer PS 87 being a heteropolysaccharide which comprises from 40 to 45% by weight of glucose, from 10 to 20% by weight galactose, from 25 to 30% by weight mannose, from 6 to 13% by weight glucuronic acid and from 0 to 1.5% by weight fucose, a 1% by weight solution of said Biopolymer PS 87 having pseudoplastic properties, a consistency at 20° C. of at least 150 poise and a yield stress value at 20° C. of at least 30 dynes/cm².

4,483,783
SOLVENT PREPARATION

James J. Albanese, Eureka, Mo., assignor to United Industries Corporation, St. Louis, Mo.

Filed Apr. 15, 1982, Ser. No. 368,587
The portion of the term of this patent subsequent to Mar. 27, 2001, has been disclaimed.
Int. Cl.³ B01F 1/00; B01J 13/00; C23G 5/02
U.S. Cl. 252—312 11 Claims

1. A non-emulsified solvent preparation in the nature of a dispersion for direct action upon a composition to be treated which is extrinsic of said preparation consisting essentially of a solvent forming the active ingredient of the preparation and being from the class consisting of water soluble solvents, combinations and mixtures of water soluble solvents, water insoluble solvents, combinations and mixtures of water insoluble solvents, and combinations and intermixtures of water soluble and water insoluble solvents, said solvent being within the range of approximately 0.1% to 89.9% by weight of the preparation, and a dispersal agent consisting of cocodiethanolamide within the range of approximately 0.1% to 10% by weight of the preparation, said cocodiethanolamide being an amber liquid having a congealing point of approximately 6° C., a specific gravity at 25° C. of about 0.99, containing a maximum of about 3–4 percent free or unreacted fatty acid (as lauric acid) and having a pH value of 8–9 as a one percent dispersion in water, and being soluble in alcohols, glycols, ketones, esters, aromatic and aliphatic hydrocarbons, and chlorinated solvents, and also being dispersible in water in low concentrations of 1% to 2%, and with the balance of the preparation being water.

4,483,784
AQUEOUS PEROXIDE EMULSION FOR USE WITH GLASS FIBERS

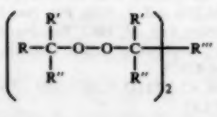
Chester S. Temple, McKees Rocks, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 136,630, Apr. 2, 1980, Pat. No. 4,377,498. This application Jul. 23, 1982, Ser. No. 401,170
Int. Cl.³ C08F 4/34
U.S. Cl. 523—203 25 Claims

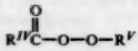
1. Aqueous sizing composition for treating glass fibers wherein the sizing composition has an aqueous emulsion of an organic peroxide with improved shelf, shear and process stability,

(a) an amount of the following aqueous emulsion sufficient to give the sizing composition an amount of active peroxide in the range of greater than 0.6 to 10 weight percent of the aqueous sizing composition, where the aqueous emulsion has an average particle size of around 1.5 microns or less and has:

(1) 1 to 70 weight percent of the emulsion of a mixture of an organic peroxide solid at a temperature of 20° C. and is selected from the group consisting of bisperoxides having the formula:

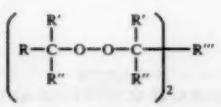


wherein R is hydrogen, alkyl hydrocarbon radical or phenyl and R′ and R″ are hydrogen or alkyl hydrocarbon radicals and R‴ is a phenyl, alkyl phenyl or $(CH_2—CH_2)_n$ moiety, where $_n$ is 1, 2 or 3 or C≡C containing moiety and peroxyesters having the formula:

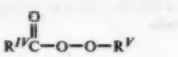


wherein R^{IV} and R^{V} are alkyl hydrocarbon radicals or phenyls, and

(2) an organic peroxide that is a liquid at 20° C. in an amount to solubilize at least a major amount of said solid organic peroxide, where the liquid organic peroxides have a half-life exceeding 60 hours at 212° F. (100° C.) and 20 minutes at 300° F. (149° C.) and have the following bis-peroxide formula:



wherein R is hydrogen, alkyl hydrocarbon radical or phenyl and R′ and R″ are hydrogen or alkyl hydrocarbon radicals and R‴ is a phenyl, alkyl phenyl or (C≡C) or $CH_2—CH_2)_n$ moiety where $_n$ is 1, 2 or 3 or the following peroxy ester formula:



wherein R^{IV} and R^{V} are alkyl hydrocarbon radicals or phenyls, where the liquid bisperoxide is used with the solid bisperoxide and the liquid peroxyester is used with the solid peroxyester,

(3) one or more emulsifying agents, and

(4) water in an amount sufficient to make an oil-in-water emulsion

(b) 0.2 to 10 weight percent of the sizing composition of a vinyl-containing silane,

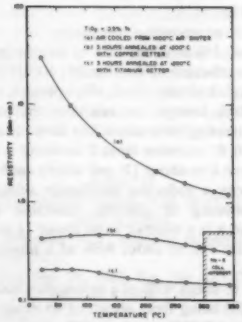
(c) 0.001 to 1 weight percent of the sizing composition of a lubricant, and

(d) an amount of water to give a weight percent total solids for the composition in the range of about 1 to about 30.

4,483,785
ELECTRICALLY CONDUCTIVE AND CORROSION RESISTANT CURRENT COLLECTOR AND/OR CONTAINER

Owen W. Johnson; Gerald R. Miller, both of Salt Lake City, Utah, and Paul S. Beutler, Richland, Wash., assignors to University of Utah Research Foundation, Salt Lake City, Utah

Division of Ser. No. 769,997, Feb. 18, 1977, Pat. No. 4,160,069, which is a continuation-in-part of Ser. No. 658,975, Feb. 18, 1976, abandoned. This application Jan. 8, 1979, Ser. No. 991
Int. Cl.³ C04B 35/46
U.S. Cl. 252—520 12 Claims



1. A method for manufacturing a high strength, noncorro-

sive, electronically conductive polycrystalline titanium dioxide ceramic member exhibiting high resistance to thermal shock and uniform grain size with an average size of less than about 25 micrometers and consisting of titanium dioxide in the rutile crystallographic form doped with a homogeneously distributed ionic metal species selected from tantalum and niobium, comprising:

(A) Dissolving in a solvent selected from water and aliphatic alcohols the pentafluoride salt of said metal species in an amount adapted to provide from about 0.01 to about 8 atomic percent of said metal species in said ceramic member;

(B) Adding titanium dioxide powder is either the rutile or anatase form to the solution of (A) to produce a mixed slurry;

(C) Drying said slurry to powder form at a temperature adapted to avoid evaporation of said metal species;

(D) Green forming said powder to the desired shape;

(E) Heating the shaped green body to about 350° C. at a rate of at least about 10° C. per minute; and

(F) Sintering said shaped green body at a temperature of at least about 1330° C.

4,483,786

NITRILE MUSK COMPOSITION

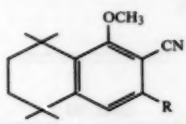
Philip A. Christenson, Midland Park; Brian J. Drake, Ringwood, and Brian J. Willis, Ramsey, all of N.J., assignors to Fritzsche Dodge & Olcott Inc., New York, N.Y.

Filed May 27, 1983, Ser. No. 498,791

Int. Cl.³ C11B *9/00*; C07C *121/75*

U.S. Cl. 252—522 R **7 Claims**

1. The compounds having the structure:



where R is methyl or ethyl.

4. A fragrance composition comprising an organoleptically effective amount of a compound of claim 1 and at least one other organoleptic agent.

4,483,787

CONCENTRATED AQUEOUS DETERGENT COMPOSITIONS

Keith A. Jones, Fairfield, and John M. Weeman, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 28, 1983, Ser. No. 566,366

Int. Cl.³ C11D *1/12*

U.S. Cl. 252—551 **15 Claims**

1. A concentrated aqueous liquid detergent composition comprising:

(1) from about 35% to about 75% of detergent surfactant having the formula $RO(R^1O)_ySO_3M$ wherein R is an alkyl group containing from about 8 to about 20 carbon atoms, R^1 is ethylene or propylene, y is a number from about 1 to about 15, and M is a compatible cationic group;

(2) from about 1% to about 35% of a detergent surfactant having the formula $R^2O(R^3O)_x(Z)_x$ where Z is a moiety derived from a reducing saccharide containing from 5 to 6 carbon atoms; x is a number from about 1½ to about 8 as an average; R is an alkyl, alkylphenyl, hydroxy alkylphenyl, or hydroxyalkyl hydrophobic group containing from about 6 to about 30 carbon atoms; each R^1 is an ethoxy, propoxy or glyceryl group; and Y is from 0 to about 10; the ratio of carbons in the hydrophobic group to the number of saccharide moieties being from about 1:1 to about 30:1; and

(3) the balance being selected from the group consisting of water, lower molecular weight alcohols containing from 1 to about 4 carbon atoms, and mixtures thereof.

4,483,788

ELECTRIC FIELD RESPONSIVE FLUIDS

James E. Stangroom, Castleton, and Ian Harness, Sheffield, both of England, assignors to The National Research Development Corp., London, England

Filed Mar. 14, 1983, Ser. No. 475,218

Claims priority, application United Kingdom, Mar. 25, 1982, 8208857

Int. Cl.³ H01B *3/20*; C10M *1/08*

U.S. Cl. 252—578 **10 Claims**

1. An electroviscous (EV) fluid composition comprising, in dispersion in an electrically non-conducting hydrophobic oleaginous vehicle, water containing particles of a phenol-formaldehyde polymer having free or neutralized acid groups, a density of not greater than 1.8 g cm^{-3} and a water absorbency such that a sample thereof, after being allowed to equilibrate with moist air at 20° C., loses at least 8% of its weight when heated to constant weight under vacuum at a temperature which does not cause decomposition of the polymer, and regains at least 40% of this loss in weight when exposed to air at an ambient relative humidity of about 60% and a temperature of 20° C., the phenol employed in the formation of said phenol-formaldehyde polymer being an aromatic compound in which at least one of the aromatic hydrogen atoms has been replaced by a hydroxyl group at a first position, and in which at least two aromatic hydrogen atoms remain either in ortho or in ortho and para relationship to the said hydroxyl group.

4,483,789

METHOD FOR PERMANENTLY STORING RADIOACTIVE ION EXCHANGER RESINS

Siegmar Kunze, Gernsbach; Gerhard Eden, Eggenstein, and Rainer Köster, Karlsruhe, all of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Fed. Rep. of Germany

Filed Jul. 15, 1983, Ser. No. 513,953

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1979, 2945007

Int. Cl.³ G21F *9/16*

U.S. Cl. 252—628 **14 Claims**

1. A method for forming a hardened product containing a radioactive ion exchanger resin in a condition for permanent, noncontaminating storage, comprising:

providing, before fixing, a mass of such ion exchanger resin saturated in water, the resin being at least one resin selected from the group consisting of spherical resins and powdered resins;

mixing the resin mass, with stirring, with a blast furnace cement having a composition which causes it to exhibit slow initial hardening, high sulfate resistance and low hydration heat and with a quantity of additional water equal in weight to 20% to 40% of the weight of the blast furnace cement; and

allowing the resulting mixture to harden at room temperature.

4,483,790

METHOD OF DISPOSING OF SHUT-DOWN NUCLEAR POWER PLANTS

Herbert Gaiser, Munich, Fed. Rep. of Germany, assignor to Alfred Kunz & Co., Munich, Fed. Rep. of Germany

Continuation of Ser. No. 24,046, Mar. 26, 1979, abandoned. This application Dec. 22, 1981, Ser. No. 333,612

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1978, 3854330

Int. Cl.³ G21F *9/34*; G21C *13/00*

U.S. Cl. 252—633 **1 Claim**

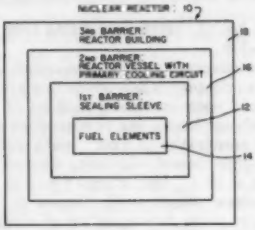
1. A method of safely disposing of a nuclear reactor including a reactor building housing a reactor vessel that contains a

sealing sleeve with a fuel element, said reactor resting on a foundation defined by the reactor building, said method comprising the steps of:

providing the reactor with sealing and radiation protecting substances to encapsulate and seal the reactor during disposal;

separating the foundation of the reactor from the reactor building;

demolishing the reactor building by conventional means;



excavating the ground below the foundation of the nuclear reactor in superposed planes, said excavation continuing until the depth of excavation is sufficiently below ground level so that the nuclear reactor lowered into the excavation and covered by earth would be safely disposed of;

controllably lowering said nuclear reactor into said excavation to said sufficient depth; and

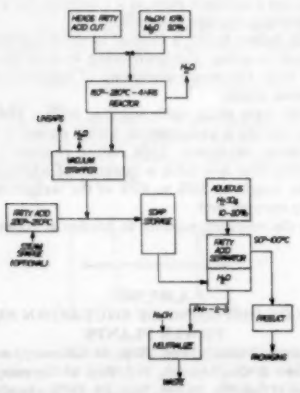
covering said nuclear reactor and filling said excavation with earth to restore a new ground level whereby said nuclear reactor is safely disposed of and the ground level is available for general use.

4,483,791

RECOVERY OF FATTY ACIDS FROM TALL OIL HEADS

C. Frank Phillips, Jr., and Dwight E. Leavens, both of Panama City, Fla., assignors to Sylvachem Corporation, Panama City, Fla.

Filed Jun. 22, 1983, Ser. No. 506,924
Int. Cl.³ C09F *1/02*
U.S. Cl. 260—97.7 **11 Claims**



1. A process for the recovery of fatty acids from tall oil heads which comprises the steps of neutralizing tall oil heads acids containing an unsaponifiable moiety with a mixture of from 75 wt. % to 95 wt. % of a magnesium soap-forming compound and from 5 wt. % to 25 wt. % of an alkali metal soap-forming compound under fusion conditions, stripping the unsaponifiable moiety at a temperature above about 230° C., springing the heads fatty acids with a mineral acid, and recovering the heads fatty acids.

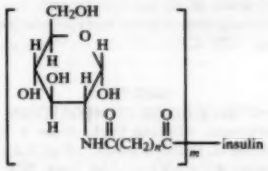
4,483,792

GLYCOSYLATED INSULIN DERIVATIVES

Wan S. Kim, 4512 Jupiter Dr., Salt Lake City, Utah 84117; Seo Y. Jeong, 716 Medical Pl. N, Salt Lake City, Utah 84112, and James C. McRea, 1876 E. 2700 S., Salt Lake City, Utah 84106

Division of Ser. No. 442,362, Nov. 17, 1982, Pat. No. 4,444,683.
This application Dec. 20, 1983, Ser. No. 532,915
Int. Cl.³ C07C *103/52*
U.S. Cl. 260—112.7 **3 Claims**

1. A glycosylated insulin having the formula



wherein n is an integer of 2 to 6, m is an integer of 1 to 3 and wherein the glycosyl group is attached to the insulin through one or more of the α-amino groups of the A-1 glycine, B-1 phenylalanine or ε-amino group of the B-29 lysine moieties of the insulin molecule.

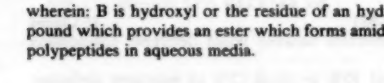
4,483,793

DIMERIC OLIGOPEPTIDES AS HEPTENIC EPITOPIC SITES FOR HEPATITIS

Girish N. Vyas, Orinda, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Oct. 4, 1982, Ser. No. 432,580
Int. Cl.³ A61K *37/02, 39/29, 37/00, 39/12;* C07G *7/00;* C07C *103/52*
U.S. Cl. 260—112.5 R **3 Claims**

1. The dimeric nonapeptide compound of the formula:



wherein: B is hydroxyl or the residue of an hydroxylic compound which provides an ester which forms amide bonds with polypeptides in aqueous media.

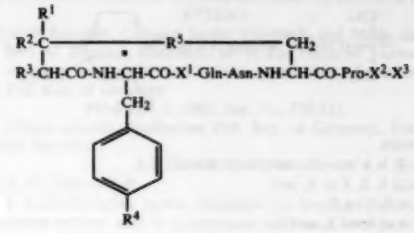
4,483,794

ANALOGS OF NEUROHYPOPHYSIAL HORMONES

Tomislav Barth, Roztoky u Prahy; Karel Jost, Prague 4; Michal Lebl, Prague 2; Alena Machová , Prague 9; Linda Servítová , Prague 4, and Jirina Slaninová, Prague 1, all of Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Filed May 10, 1983, Ser. No. 493,370
Int. Cl.³ C07C *103/52;* H61K *37/00*
U.S. Cl. 260—112.5 R **12 Claims**

1. Analog of neurohypophysial hormone which evidences inhibition properties having the formula



wherein chiral amino acids are of the L-series and the aromatic amino acid in position 2, as indicated by the asterisk, is of the D-series,

R^1 and R^2 being selected from the group consisting of hydrogen and a methyl group,

R^3 being selected from the group consisting of hydrogen, an amino group or a triglycylamino group,

R^4 being selected from the group consisting of hydrogen, a methyl group, an ethyl group and an ethoxyl group,

R^5 being selected from the group consisting of S—CH_2 and S—S,

X^1 being selected from the group consisting of isoleucine and phenylalanine,

X^2 being selected from the group consisting of leucine or lysine, and

X^3 being selected from the group consisting of a glycinamide residue and a hydroxyl group.

4,483,795

SUBSTITUTED PHENYL DISAZO DYES CONTAINING A 2-AMINO-SUBSTITUTED THIAZOLE RADICAL

Heinz Eilingsfeld, Frankenthal; Guenter Hansen; Guenther Seybold, both of Ludwigshafen, and Georg Zeidler, Dannstadt-Schauernheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 931,248, Aug. 4, 1978, Pat. No. 4,372,885. This application Oct. 13, 1982, Ser. No. 433,887

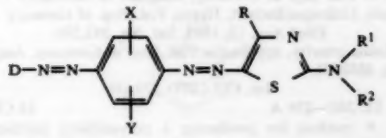
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1977, 2735751; Apr. 15, 1978, 2816505

The portion of the term of this patent subsequent to Feb. 8, 2000, has been disclaimed.

Int. Cl.³ C09B *31/14, 33/12;* **D06P** *1/18, 3/54*

U.S. Cl. 534—756 **7 Claims**

1. An azo dye of the formula:



wherein:

D is phenyl substituted by chlorine, bromine or fluorine and cyano;

X and Y are each methoxy or ethoxy;

R is phenyl, tolyl or methoxyphenyl; or

R^1 and R^2 are each C_1–C_4 alkyl or allyl, and are the same.

4,483,796

SULFO GROUP-FREE DISAZO AND POLYAZO COMPOUNDS CONTAINING TWO 1-PHENYLPYRAZOL-5-ONE COUPLING COMPONENT RADICALS AND AT LEAST TWO BASIC OR CATIONIC GROUPS

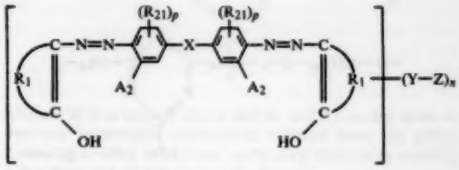
Paul Doswald, Münchenstein; Emil Moriconi, Basel; Helmut Moser, Oberwil, and Horst Schmid, Reinach, all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Division of Ser. No. 361,183, Mar. 24, 1982, Pat. No. 4,468,347, which is a continuation-in-part of Ser. No. 261,320, May 7, 1981, abandoned. This application Aug. 18, 1982, Ser. No. 409,164

Int. Cl.³ C09B *35/18, 35/22, 35/227, 35/26*

U.S. Cl. 534—604 **19 Claims**

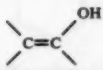
1. A compound of the formula



wherein

each A_2 is independently hydrogen, hydroxy or C_{1-4}alkoxy,

each R_1 and the



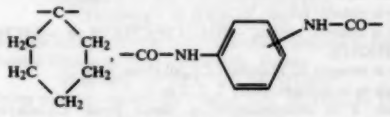
radical to which it is attached, taken together, independently, are a 1-phenylpyrazol-5-one coupling component radical the phenyl ring of which is substituted by one of the compound's -Y-Z groups,

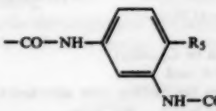
each R_{21} is independently chloro, bromo, C_{1-4}alkyl or C_{1-4}alkoxy,

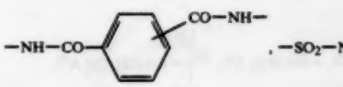
X is a direct bond, straight or branched C_{1-4}alkylene,

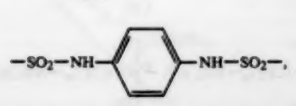
—CO—, —NH—CS—NH—, —S—, —O—, —CH=CH—,

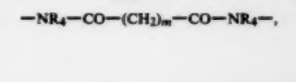
—S—S—, $-SO_2-$, —NH—, —NH—CO—, —N(CH_3)—CO—,





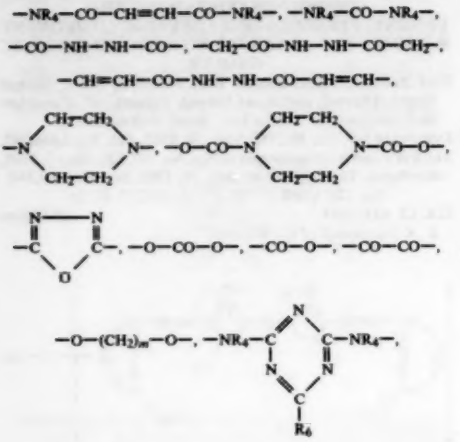




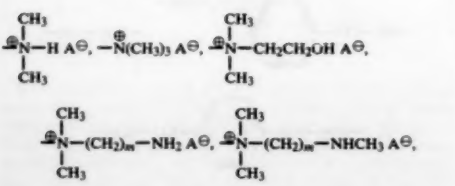


$-NR_4-CO-(CH_2)_m-CO-NR_4-$,

-continued



wherein
each R_4 is independently hydrogen or C_{1-4}alkyl,
R_5 is chloro, bromo, c_{1-4}alkyl or C_{1-4}alkoxy,
R_6 is chloro, bromo, —NH—CH_2CH_2OH or —N(CH_2CH_2OH)$_2$,
R_7 is straight or branched C_{1-4}alkylene, and
each m is independently 1, 2, 3 or 4,
each Y is independently a direct bond, C_{1-4}alkylene, —CO—NH—$(CH_2)_m$*–, —NH—CO—$(CH_2)_m$*–or —SO_2—NR_4—$(CH_2)_m$*–,
wherein
R_4 is hydrogen or C_{1-4}alkyl,
m is 1, 2, 3 or 4, and
the *** denotes the carbon atom attached to Z,
each Z is independently —N(CH_3)$_2$,



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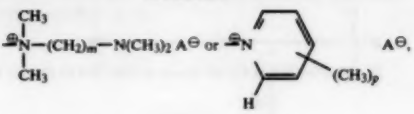


wherein
A⊕ is a non-chromophoric anion,
m is 1, 2, 3 or 4, and
p is 0, 1 or 2,
n is at least 2, and
p is 0, 1 or 2,
with the proviso that the compound is free of sulfo groups.

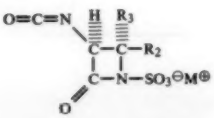
4,483,797

(S)-3-ISOCYANATO-2-OXO-1-AZETIDINESULFONIC ACIDS

David Floyd, and Christopher M. Cimarusti, both of Pennington, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 27, 1981, Ser. No. 257,833
Int. Cl.[3] **C07D** *205/08*
U.S. Cl. 260—239 A **7 Claims**

1. A β-lactam having the formula



wherein R_2 and R_3 are the same or different and each is hydrogen or alkyl and M⊕ is hydrogen or a cation.

4,483,798

POLYADDITION PRODUCTS CONTAINING URETIDIONE GROUPS AND PROCESS FOR THEIR PREPARATION

Josef Disteldorf; Rainer Gras; Werner Hübel, all of Herne; Elmar Wolf, Recklinghausen, and Horst Schnurbusch, Herne, all of Fed. Rep. of Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Herne, Fed. Rep. of Germany

Filed Aug. 13, 1981, Ser. No. 292,500
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1980, 3030572
Int. Cl.[3] **C07D** *229/00*
U.S. Cl. 260—239 A **13 Claims**

1. A method for producing a polyaddition product of isophoronediisocyanate and diols which comprises:
reacting a uretidione dimer of isophorone diisocyanate, which is 98% decomposable by heat into isophoronediisocyanate, with a diol, wherein the ratio of NCO to OH groups is such that said polyaddition product has free terminal NCO groups, or free terminal OH groups.

4,483,799
HYDROXY ALKANE SULFONIC ACID SULFOALKYL ESTERS

Helmut Kampfer, Cologne; Detlef Wendisch, and Marie Hase, both of Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 2, 1981, Ser. No. 230,321

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1980, 3004692

Int. Cl.[3] **C07C** *143/68*

U.S. Cl. 260—456 R **2 Claims**

1. Sulfoalkylating agent, obtainable by heating 3-hydroxypropane sulfonic acid or 1,3-propane sultone to a temperature in the region of from 80 °o 180° C. in the presence of water in an amount of from 1 to 4 moles per mole of 3-hydroxy propane sulfonic acid or 1,3-propane sultone, and characterized by the following ^{13}C-NMR-shifts (ppm, relative to TMS=0, in D_2O in the presence of dioxane): 25.2; 27.8; 48,8; 61.1 and 69.5.

2. Sulfoalkylating agent, obtainable by heating 4-hydroxy butane-2-sulfonic acid or 3-methyl-1,3-propane sultone to a temperature in the region of from 80° to 180° C. in the presence of water in an amount of from 1 to 4 moles per mol of 4-hydroxy-butane-2-sulfonic acid or 3-methyl-1,3-propane sultone, and characterized by the following ^{13}C-NMR-shifts (ppm, relative to TMS=0, in the presence of dioxane): 15.4; 31.7; 34.4; 53.6; 60.0 and 68.5.

4,483,800
PREPARATION OF 4-(α-ALKYL-α-CYANO-METHYL)-2,6-DI-SUBSTITUTED PHENOLS

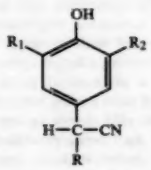
Charles R. Everly, and Gene C. Robinson, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 385,609, Jun. 7, 1982, abandoned. This application Jul. 5, 1983, Ser. No. 510,886

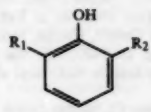
Int. Cl.[3] **C07C** *121/75, 69/66*

U.S. Cl. 260—465 F **23 Claims**

1. A process for the preparation of 4-(α-hydrocarbyl-α-cyano-methyl)2,6- di-substituted phenol having the formula

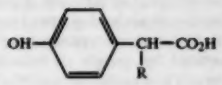


wherein R is selected from hydrogen, hydrocarbyl radicals, substituted hydrocarbyl radicals and hydrocarbyloxy radicals and R_1 and R_2 are the same or different monovalent substituents selected from the group consisting of alkyl, aralkyl and cyclic alkyl radicals which comprises reacting a di-substituted phenol having the formula

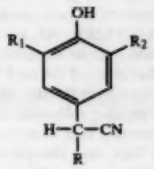


wherein R_1 and R_2 are as defined above with an aldehyde having at least one aldehyde radical and containing an R group as defined above and an alkali metal or an alkaline earth metal cyanide in a suitable reaction solvent to form said 4-(α-hydrocarbyl-α-cyano-methyl)2,6-di-substituted phenol.

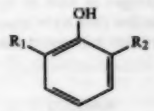
12. A process for preparing α-hydrocarbyl-4-hydroxyphenylacetic acid having the formula



wherein R is selected from hydrogen, hydrocarbyl radicals, substituted hydrocarbyl radicals and hydrocarbyloxy radicals which comprises (i) preparing a 4-(α-hydrocarbyl-α-cyano-methyl)2,6-di-substituted phenol having the formula



wherein R is as defined above and R_1 and R_2 are the same or different monovalent substituents selected from the group consisting of alkyl, aralkyl and cyclic alkyl radicals by reacting a di-substituted phenol having the formula



wherein R_1 and R_2 are as defined above with an aldehyde having at least one aldehyde radical and an R group as defined above and an alkali metal or an alkaline earth metal cyanide in a suitable reaction solvent to form said 4-(α-hydrocarbyl-α-cyano-methyl)2,6-di-substituted phenol, (ii) dealkylating the substituent groups ortho to the hydroxyl group from said 4-(α-hydrocarbyl-α- cyano-methyl)2,6-di-substituted phenol to form the corresponding 4-(α-hydrocarbyl-α-cyano-methyl)-phenol, and (iii) converting said 4-(α-hydrocarbyl-α-cyano-methyl)- phenol by hydrolysis to the corresponding α-hydrocarbyl-4-hydroxyphenylacetic acid.

4,483,801
PREPARATION OF SULFONATED TRIARYLPHOSPHINES

Jean-Louis Sabot, Maisons Laffitte, France, assignor to Rhone-Poulenc Chimie de Base, Courbevoie, France

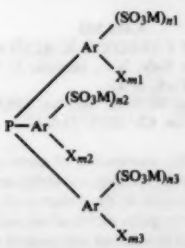
Filed Aug. 30, 1983, Ser. No. 527,859

Claims priority, application France, Aug. 31, 1982, 82 14862

Int. Cl.[3] **C07C** *143/24*

U.S. Cl. 260—505 C **25 Claims**

1. A process for the preparation of a sulfonated triarylphosphine having the following general formula:



(I)

wherein the radicals Ar are identical or different aryl radicals, the radicals X are identical or different straight or branched chain alkyl or alkoxy radicals having from 1 to 4 carbon atoms, halogen atoms, and the radicals hydroxy, nitrile, nitro, amino and amino substituted by straight or branched chain alkyl radicals having from 1 to 4 carbon atoms; M is hydrogen or an organic or inorganic cation such that the compound having the formula (I) is soluble in water; m_1, m_2 and m_3 are integers which may be identical or different and which range from 0 to 5; and n_1, n_2 and n_3 are integers which may be identical or different and which range from 0 to 3, with the proviso that at least one of n_1, n_2 and n_3 is 1 or greater; comprising (i) sulfonating the aromatic moieties of a corresponding triarylphosphine starting material with an H_2SO_4/SO_3 mixture; (ii) hydrolyzing the sulfonation reaction mixture to terminate said sulfonation reaction when same has attained the desired degree of sulfonation, thereby producing a hydrolysate rich in sulfuric acid and which comprises the product sulfonated triarylphosphine; (iii) next liquid/liquid extracting said hydrolysate with an organic phase comprising at least one phosphoric or diphosphoric, phosphonic or diphosphonic, phosphinic or diphosphinic ester, or phosphine oxide or diphosphine dioxide, or slightly water miscible or immiscible C_4–C_{12} alcohol, or sulfoxide extractant, whereby the sulfonated triarylphosphine (I) is extracted into said organic phase, (iv) separating the organic phase from the aqueous raffinate; (v) regenerating said organic phase with water when M is hydrogen or with an aqueous solution comprising M when M is other than hydrogen; and (vi) recovering an aqueous solution of said sulfonated triarylphosphine (I).

4,483,802

PROCESS FOR THE PREPARATION OF SULFONATED ARYL PHOSPHINE

Roderich Gärtner; Boy Cornils, both of Dinslaken; Helmut Springer, and Peter Lappe, both of Oberhausen, all of Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesekkschaft, Fed. Rep. of Germany

Filed Sep. 20, 1983, Ser. No. 534,089

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1982, 3235030

Int. Cl.³ C07C *143/24*

U.S. Cl. 260—505 C **11 Claims**

1. A process for the preparation of at least one of mono-, di-, and trisulfonated triaryl phosphine comprising sulfonating triaryl phosphines with oleum at 0° to 40° C. to form a sulfonation mixture, diluting said mixture with water to form an aqueous solution, extracting said aqueous solution with an organic solution of a water-insoluble amine in a water-insoluble organic solvent in an amount sufficient to deliver 0.5 to 1.5 mol of said amine per sulfonic acid group equivalent, separating said organic solution, mixing said organic solution with an aqueous solution of a base to form a basic aqueous phase, separating said basic aqueous phase and recovering at least one of said mono-, di-, and trisulfonated triaryl phosphine therefrom.

4,483,803

PREPARATION OF CARBOXYLIC ACID ANHYDRIDES

Nabil Rizkalla, River Vale, N.J., assignor to The Halcon SD Group, Inc., New York, N.Y.

Filed Sep. 30, 1982, Ser. No. 429,925

Int. Cl.³ C07C *51/14*

U.S. Cl. 260—546 **4 Claims**

1. A process for the preparation of carboxylic acid anhydrides which comprises reacting an olefin and a carboxylic acid with carbon monoxide in the presence of a molybdenum-nickel-alkali metal, a tungsten-nickel-alkali metal or a chromium-nickel-alkali metal co-catalyst component and in the presence of a halide.

4,483,804

PREPARATION OF CARBOXYLIC ACID ANHYDRIDES

Nabil Rizkalla, River Vale, N.J., assignor to The Halcon SD Group, Inc., New York, N.Y.

Filed Sep. 30, 1982, Ser. No. 430,095

Int. Cl.³ C07C *51/12*

U.S. Cl. 260—546 **4 Claims**

1. A process for the preparation of carboxylic acid anhydrides which comprises reacting a carboxylate ester and/or a hydrocarbyl ether with carbon monoxide in the presence of a catalyst comprising a molybdenum-nickel-alkali metal or a tungsten-nickel-alkali metal co-catalyst component and in the presence of an iodide or bromide.

4,483,805

PROCESS FOR INJECTION OF FLUID, E.G. SLURRY IN E.G. FLUE GASES AND A NOZZLE DEVICE FOR THE ACCOMPLISHMENT OF THE PROCESS

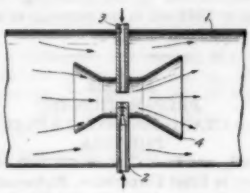
Per Glindsjö, Växjö, Sweden, assignor to ADL-Innovation KB, Växjö, Sweden

Filed Jun. 8, 1983, Ser. No. 502,164

Claims priority, application Sweden, Jun. 9, 1982, 8203568

Int. Cl.³ F16K *19/00*

U.S. Cl. 261—78 A **2 Claims**



1. Apparatus for injecting a slurry into a moving stream of flue gas to remove constituents therefrom, comprising a flue gas duct, a nozzle disposed concentrically within said duct and having one open end for receiving said flue gas, another open end for discharging the same therefrom, and a central throat disposed between said open ends, first and second diametrically opposed ducts connected respectively to the throat of said nozzle and provided with openings opposed to one another, said first duct having a larger opening than said second one for conducting a pressurized gaseous medium to said throat and said second duct having a smaller opening for conducting said slurry to said throat in opposition to said first opening, said second duct being provided at the end thereof terminating at said throat with a wear-resistant material, whereby a thin stream of slurry may be injected into said nozzle at high speed against an opposed stream of a pressurized gaseous medium to form fine slurry drops which are further dispersed by the flue gas passing through said nozzle.

4,483,806

PROCESS FOR THE PRODUCTION OF U_3O_8 POWDER

Paul Börner, Freigericht; Jürgen Dübel, Grosskrotzenburg, and Jürgen Hofmann, Bad Orb, all of Fed. Rep. of Germany, assignors to Nukem GmbH, Hanau, Fed. Rep. of Germany

Filed Aug. 25, 1982, Ser. No. 411,322

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1981, 3136302

Int. Cl.³ G21C *21/00*

U.S. Cl. 264—0.5 **8 Claims**

1. In a process for the production of U_3O_8 powder having a crystal size of 40 to 90 μm by calcining a finely powdered uranium compound of the oxidation stage +4 to +6 in an oxygen containing atmosphere at normal pressure, the improvement comprising calcining the uranium compound at a temperature of at least 1250° C. in an atmosphere containing at least 30 volume % of oxygen.

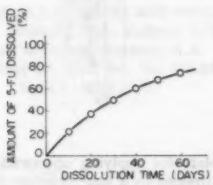
8. A process for the production of U_3O_8 powder according to claim 1 wherein the temperature treatment takes place in 10 to 30 hours.

4,483,807

PROCESS FOR PRODUCING A SLOW RELEASE COMPOSITE

Masaharu Asano; Masaru Yoshida, and Isao Kaetsu, all of Gunma, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed Jan. 20, 1982, Ser. No. 340,989
Claims priority, application Japan, Jan. 27, 1981, 56-10674; Jan. 30, 1981, 56-12606; May 26, 1981, 56-79567
Int. Cl.³ H05B 6/64
U.S. Cl. 264—22 4 Claims



1. A process for producing a slow release composite having a physiologicaly active substance encapsulated therein, wherein a system comprising

one or more polypeptides selected from the group consisting of poly-alanine, poly-glycine, poly-valine, poly-leucine, polyisoleucine, poly-serine, poly-o-benzyl-serine, poly-threonine, poly-o-benzyl-threonine, poly-cysteine, poly-s-benzyl-cysteine, poly-cystine, poly-methionine, poly-proline, poly-oxyproline, poly-aspartic acid, poly-β-benzyl-aspartic acid, poly-glutamic acid, poly-γ-benzyl-glutamic acid, poly-γ-methyl-glutamic acid, poly-histidine, poly-lysine, poly-oxylysine, poly-ornithine, poly-arginine, poly-nitroalginine, poly-phenylalanine, poly-tyrosine, poly-o-benzyl-tyrosine, and polytryptophan,

one or more proteins selected from the group consisting of starch, beta-globulin, gamma-globulin, albumen albumin, milk albumin, bovine serum albumin, human serum albumin, other serum albumins, leucosin, hemoglobin, globin, alpha-lipoprotein, beta-lipoprotein, fibrinogen, ovalbumin, conalbumin euglobulin, pseudoglobulin, glutenin, gliadin, insulin, glutathione, pectin, albumen, prolamine, glutelin, histone, protamine, metaprotein, peptone, myoglobin, ferritin, bacteriorhodopsin, rubredoxin, chymotrypsin, ribonuclease, papain, thermolysin, thioredoxin, flavodoxin, hexokinase, phosphorylase, carboxypeptidase A, albumen lysozyme, cytochrome, thrombin, elastase, pepsin, elastin, and protamine, and

one or more physiologically active substances is ground into particles and mixed mechanicaly in a frozen state,

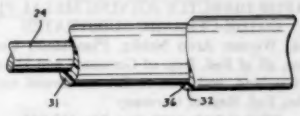
the blend is shaped into a suitable form, and the shaped article is compressed into a suitable form at a pressure of from 100 to 20,000 kg/cm².

4,483,808

METHODS OF MAKING A COMPOSITELY INSULATED CONDUCTOR HAVING A LAYER OF IRRADIATION CROSS-LINKED POLYMERIC MATERIAL

Harry M. Dillow, DeKalb County, Ga.; Anthony E. Sansone, Sarpy County, Nebr., and Raymond K. Swartz, Gwinnett County, Ga., assignors to AT&T Technologies, Inc., Murray Hill, N.J.

Division of Ser. No. 349,887, Feb. 18, 1982, Pat. No. 4,430,385. This application Nov. 18, 1983, Ser. No. 553,267
Int. Cl.³ H01B 13/14
U.S. Cl. 264—22 7 Claims



1. A method of compositely insulating an elongated metallic conductor, said method including the steps of:

advancing the elongated metallic conductor;

covering the conductor with a first layer of plastic material which comprises a plasticized polyvinyl chloride composition and which is applied to the conductor in an extrusion crosshead;

covering the first layer with a second layer of plastic material comprising an irradiation cross-linkable, plasticized polyvinyl chloride composition and having a thickness that is substantially less than that of the first layer, the second layer being applied by the extrusion crosshead and having an adhesion to the first layer which is greater than that of the first layer to the conductor and which is sufficient to cause any elongation of the adhered layers to be substantially unitary;

irradiation cross-linking the second layer of plastic material; and

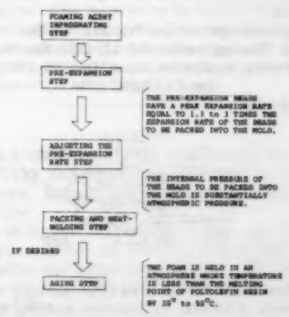
taking up the elongated metallic conductor which is enclosed by the first layer of plastic material and the irradiation cross-linked second layer of plastic material.

4,483,809

PROCESS FOR PREPARING POLYOLEFIN FOAM

Masao Ando, Toyonaka; Kenkichi Tanaka, and Kiroku Sato, both of Settsu, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jan. 14, 1983, Ser. No. 458,134
Claims priority, application Japan, Jan. 14, 1982, 57-4514
Int. Cl.³ B29D 27/00
U.S. Cl. 264—53 7 Claims


FOAMING AGENT IMPREGNATING STEP
PRE-EXPANSION STEP
THE PRE-EXPANDED BEADS HAVE A PEAK EXPANSION RATE EQUAL TO 1.3 to 3 TIMES THE EXPANSION RATE OF THE BEADS TO BE PACKED INTO THE MOLD.
ADJUSTING THE PRE-EXPANSION RATE STEP
THE INTERNAL PRESSURE OF THE BEADS TO BE PACKED INTO THE MOLD IS SUBSTANTIALLY ATMOSPHERIC PRESSURE.
PACKING AND HEAT-MOLDING STEP
IF DESIRED
AGING STEP
THE FOAM IS HELD IN AN ATMOSPHERE WHOSE TEMPERATURE IS LESS THAN THE MELTING POINT OF POLYOLEFIN RESIN BY 15° to 50°C.

1. In a process for preparing a polyolefin foam by impregnating polyolefin resin particles with a foaming agent, pre-expand-

ing the polyolefin resin particles to give pre-expanded beads, adjusting the beads to a pre-expansion rate depending on an expansion rate of the desired foam, packing and heat-molding the pre-expanded beads in a mold, the improvement which comprises preparing pre-expanded beads having a peak expansion rate at the pre-expansion step equal to 1.3 to 3 times the expansion rate of the beads to be packed into the mold, and adjusting at the adjusting step an internal pressure of the beads to be packed into the mold to substantially atmospheric pressure.

4,483,810

METHOD FOR DIRECTLY JOINING METAL PIECES TO OXIDE-CERAMIC SUBSTRATES

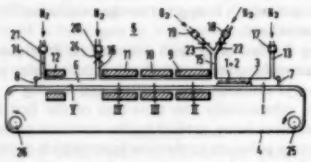
Klaus Bunk, Worms; Arno Neidig, Plankstadt; Georg Wahl, Eppelheim, all of Fed. Rep. of Germany, and Helmut Keser, Birr, Switzerland, assignors to Brown, Boveri and Cie AG, Mannheim, Fed. Rep. of Germany

Filed Feb. 4, 1983, Ser. No. 463,911

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1982, 3204167

Int. Cl.³ C04B *39/00*

U.S. Cl. 264—60 **15 Claims**



1. A method for the direct joining of metal pieces to ceramic oxide substrates which comprises covering the ceramic substrate with a metal piece having an oxide coating on the side facing the ceramic substrate, heating the substrate covered by the metal piece with an oxide coating to a temperature above the eutectic temperature of the metal and the oxide but below the melting point of the metal to form a eutectic melt in an atmosphere of an inert gas and 20 to 50 volume parts per million oxygen, reducing the temperature to cool and solidify the eutectic melt and after solidification of the eutectic melt continuing cooling while maintaining the ceramic substrate with covering metal piece in an atmosphere of an inert gas in the absence of oxygen.

4,483,811

PRODUCTION OF ELECTRODE BODY

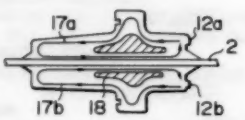
Kozi Hirata, Yamaguchi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 332,762, Dec. 21, 1981, abandoned. This application Jul. 12, 1983, Ser. No. 513,100

Claims priority, application Japan, Dec. 26, 1980, 55-183893

Int. Cl.³ B29C *6/04*

U.S. Cl. 264—162 **9 Claims**



1. A method of production of an electrode body wherein the electrode body is formed by injection molding by injecting resin into a mold having a conductive member of small diameter located therein, the distance in the radial direction from the surface of the conductive member to the inner surface of the mold being large compared with the diameter of the conductive member, comprising the steps of:

arranging the injection gates for injecting resin into said mold in at least two positions substantially equidistantly spaced apart from each other, all of said injection gates being located to inject the resin substantially parallel to said conductive member and all of said injection gates being positioned substantially on the circumference of an imaginary circle at one axial end only of the conductive member; and

injecting the resin through said injection gates.

4,483,812

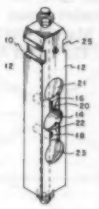
VALVE PLATE AND FEEDBLOCK DESIGN FOR CO-EXTRUSION APPARATUS AND CO-EXTRUSION PROCESS USING SAME

Granville J. Hahn; Raleigh N. Rutledge, and Jackie D. Murley, all of Big Spring, Tex., assignors to Cosden Technology, Inc., Dallas, Tex.

Filed Apr. 15, 1983, Ser. No. 485,550

Int. Cl.³ B29F *3/04*

U.S. Cl. 264—171 **13 Claims**



1. A valve plate for applying co-extruded thermoplastic synthetic resin streams to a base polymer layer or to other thermoplastic synthetic resin streams, comprising:

a body portion, comprising:

two cavities partially extending through the thickness thereof and positioned on opposite sides of a polymer base layer flow channel which extends entirely through said body portion;

two receiving areas positioned radially outwardly of said cavities for receiving the thermoplastic synthetic resin streams, said streams passing from said receiving areas longitudinally across the openings of said cavities to said flow channel for application to said base layer; and

a slotted end region for grasping and removing the valve plate;

resin flow control means located in, but independent of and separately removable from, each of said cavities, said resin flow control means comprising an elliptically-shaped orifice and a resin engaging surface which is shaped according to flow considerations; and

means for positioning said control means, said positioning means extending transversely from each of said cavities and longitudinally through said body portion and extending past the edge of said body portion and comprising a cam at the cavity end thereof, said cam engaging said elliptically-shaped orifice, wherein said cam, upon rotation, causes movement of said flow control means within said channel to control said resin flow to the base layer.

7. A laydown means for the application of multiple layers of thermoplastic synthetic resinous material to an initial polymeric base layer, comprising:

a feedblock for receiving at least one resin stream and for preparing said stream for application to the base layer; and

a valve plate for receiving said stream from said feedblock and applying said stream to the base layer, said valve plate including:

a body portion, comprising:

two cavities partially extending through the thickness thereof and positioned on opposite sides of a polymer base layer flow channel which extends entirely through said body portion;

two receiving areas positioned radially outwardly of said cavities for receiving the thermoplastic synthetic resin streams, said streams passing from said receiving areas longitudinally across the openings of said cavities to said flow channel for application to said base layer; and

a slotted end region for grasping and removing the valve plate;

resin flow control means located in, but independent of and separately removable from, each of said cavities, said resin flow control means comprising an elliptically-shaped orifice and a resin engaging surface which is shaped according to flow considerations; and

means for positioning said control means, said positioning means extending transversely from each of said cavities and longitudinally through said body portion and extending past the edge of said body portion and comprising a cam at the cavity end thereof, said cam engaging said elliptically-shaped orifice, wherein said cam, upon rotation, causes movement of said flow control means within said channel to control said resin flow to the base layer.

8. A laydown means as defined in claim 7, further comprising a means positioned for external adjustment comprising a cam for positioning said control means.

4,483,813

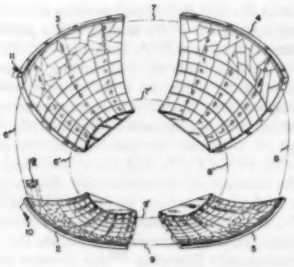
INSIDE, FULL 360 DEGREE MOLD

Charles M. Longo, Freehold, N.J., assignor to Studio Design, Inc., T/A Rainbow Art Glass, Neptune, N.J.

Filed May 17, 1983, Ser. No. 495,539

Int. Cl.³ B29C *1/02*

U.S. Cl. 264—225 **5 Claims**



1. A method for preparing molds for use in making decorative, 360 degree elements taken from the group comprising lampshades, terrariums and lamp bases, comprising the steps of:

preparing a hemispherical master form which reflects the desired shape and final form of the mold;

applying a layer of formable, hardenable resin to said master;

placing filamental wire on said resin layer to define a desired pattern thereon;

applying a second layer of said resin over said filamental wire;

applying heat and pressure to said master form so as to cause said resin layers to form integrally around said filamental wires causing definable, patterned ridges over the surface thereof; and,

casting a copy of said patterned ridges by applying a thin, deformable plastic sheet thereon and applying sufficient heat and pressure to cause said plastic to form a copy of said patterned ridges therein, whereby a series of said copys can be used to form a 360 mold for use in preparing said lampshades, terrariums and lamp bases by the application of transparent materials cut to fit within said patterned ridges.

4,483,814

METHOD AND APPARATUS FOR FORMING STRETCHED RESIN SHEET

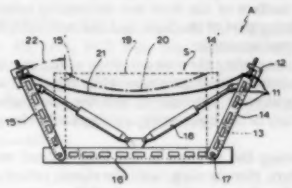
Otmar Krajec, and Walter Hellmann, both of Rossdorf, Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed May 31, 1983, Ser. No. 499,292

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1982, 3221100

Int. Cl.³ B29C *17/02*

U.S. Cl. 264—230 **6 Claims**



1. A method for making a rigid, one-piece, thin-walled shaped body of stretched synthetic resin, the edge of which body is not in one plane and the surface of which body is smaller than the imaginary flat initial surface which is enclosed by its edge, which method comprises the steps of deforming a plane sheet of a biaxially stretched synthetic resin having a thickness of at least 1 mm to a shape which is not in one plane and which conforms to said initial surface, fixing the edge of the deformed sheet in the shape so attained, heating the surface of the resin enclosed by the edge to a temperature at which the resin is in a thermoelastic condition, separating opposite portions of the fixed edge between which the resin sheet extends rectilinearly prior to heating by overcoming the restoring force released by heating and allowing the surface enclosed by the fixed edge partially to shrink back, and then cooling the resin to a temperature below its softening point.

5. An apparatus for making a rigid, one-piece, thin walled, shaped body of stretched and back-shrunk synthetic resin, said body having an edge which does not lie in one plane and a surface which is smaller than the imaginary flat surface which is enclosed by its edge, which apparatus comprises means, not lying in one plane, for fixing the edge of a resin sheet in a clamped position not lying in one plane, said means including a holder resistant to the restoring forces of the resin encountered when said resin is back-shrunk and having opposing holder portions between which the fixed resin sheet extends rectilinearly prior to back-shrinkage, said opposing holder portions being movably mounted to be displaceable in a direction counter to said restoring forces when the apparatus is actuated, and motion-imparting means connected to said displaceable holder portions for displacing said opposing holder portions to overcome said restoring forces.

4,483,815

PROCESS AND DEVICE FOR VULCANIZING WITH CONTINUITY ELASTOMERIC MATERIAL HOSES

Flavio Torghele, Milan, Italy, assignor to TREG S.p.A., Veniano, Italy

Continuation of Ser. No. 232,624, Feb. 9, 1981, abandoned. This application Jan. 10, 1983, Ser. No. 456,981

Claims priority, application Italy, Mar. 31, 1980, 21057 A/80

Int. Cl.³ B29C *17/02*; B29H *5/28*

U.S. Cl. 264—566 **5 Claims**

1. A process for continuously vulcanizing an assembled uncured elastomeric hoses having an outer surface, a remaining elastomeric material inside said outer surface, a longitudi-

nal resistant structure embedded in said hose, and an uncured hollow core tube comprising the steps of:

a. conveying said hose, with its hollow tube core under pressurization, through a first hollow vulcanizng tube while simultaneously heating and compressing the uncured outer layer of said hose, said heating and compressing being performed to an extent such that only the uncured outer layer is at least partially vulcanized and the remaining part of the hose is left substantially uncured;

b. elastically elongating the already vulcanized outer surface layer of the hose and the longitudinal resistant structure of the hose through the application of tractional stresses to the hose;

c. maintaining the remaining elastomeric material and core tube in the uncured state while applying said tractional stresses for elastically elongating the already vulcanized outer surface of the hose and deforming permanently the remaining part of the hose and the core tube through said tractional stresses;

d. then completing the vulcanization of the remaining elastomeric material and core tube while the outer surface layer that is already vulcanized, and the longitudinal resistant structure of the hose, are in an elastically elongated condition;

e. removing the stresses in the longitudinal resistant hose structure, thus causing, with the elastic return of the longitudinal resistant structure and of the outer surface of the hose, which has more energy, the compression of the elastomeric material inside the hose and the compacting of the core tube.

3. An apparatus for continuously vulcanizing an assembled but uncured elastomeric hose already having an uncured hollow core tube, traction-resistant reinforcement members em-

bedded in said core tube, a transverse resistant reinforcement member surrounding said core tube, and an uncured outer layer around said transverse resistant reinforcement member and extending along the length of the hose, said apparatus comprising, on the same axis as that of the hose passing through the apparatus, a first tubular member having an inner surface about a cavity and means for heating said inner surface, said cavity having a larger diameter than the diameter of the outer surface of the hose;

a second tubular member, comprising means for vulcanizing only the outer layer of the hose and disposed downstream from the first tubular member and in substantial axial alignment therewith, means for heating the second tubular member to a uniform temperature over the entire length thereof, said second tubular member having a bore with a diameter which is substantially equal to the outer dimensions of the hose, whereby direct contact and mechanical pressure is effected between the entire external surface of the hose and the heated wall of the bore as the hose is pulled through the second tubular body;

a third substantially axially aligned tubular body comprising means for vulcanizing the remaining part of the hose connected to the second tubular member by a coupling member which diverges towards the third tubular body, a cavity therein of larger diameter than said second tubular body, means for heating the inner surface of the cavity to vulcanize the entire hose, including the core tube thereof;

means for the exertion of an opposing force of pressurized fluid inside the hose, said means being used in combination with said vulcanizing means;

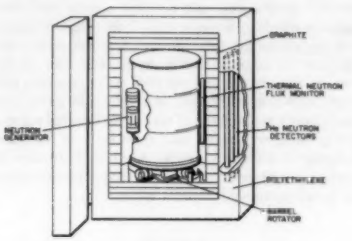
and substantially axially aligned means downstream of the third tubular body for applying a traction force on the hose whereby the previously vulcanized outer layer of the hose is elastically elongated in relation with the yet uncured core tube which is subsequently cured while passing through the third tubular body and while under traction.

4,483,816

APPARATUS AND METHOD FOR QUANTITATIVE ASSAY OF GENERIC TRANSURANIC WASTES FROM NUCLEAR REACTORS

John T. Caldwell, Los Alamos; Walter E. Kunz, Santa Fe, and James D. Atencio, Los Alamos, all of N. Mex., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Mar. 31, 1982, Ser. No. 363,979
Int. Cl.[3] G21G 1//12
U.S. Cl. 376—158 **5 Claims**



1. A method for quantitative assay of a sample of generic transuranic waste containing a mixture of the fissile isotopes ^{239}Pu, ^{233}U, and ^{235}U, and the non-fissile isotopes ^{240}Pu, ^{241}Am, ^{244}Cm and ^{252}Cf, using a first and second neutron detection apparatus, which comprises the steps of:

(a) calibrating the first neutron detection apparatus using a standard ^{252}Cf neutron source;

(b) calibrating the first and second neutron detection apparatus using a standard ^{239}Pu sample and a pulsed neutron source external to said ^{239}Pu sample;

(c) repetitively quantitatively determining passive neutron emission from the sample for specific time intervals until a useful magnitude of signal has been accumulated using the first neutron detection apparatus, which further comprises the steps of: (i) measuring passive neutron coincidence multiplicity yields, P_2, P_3, and P_4, to quantitatively determine the amount of spontaneously fissioning isotopes present; and (ii) measuring the noncoincidence neutron yield, P_1, which in combination with said passive neutron coincidence yield measurements provides the amount of non-spontaneously fissioning ^{241}Am present through the known production rate of neutrons from the reaction of emitted alpha particles with any oxygen isotopes present in the sample;

(d) periodically irradiating the sample with pulsed neutrons from a source external to said sample to induce nuclear fission in the fissile isotopes present in the sample;

(e) quantitatively determining the active neutron emission subsequent to said neutron irradiation step and resulting from said pulsed neutrons inducing fission with release of fission neutrons in the fissile isotopes present in the sample using the second neutron detection apparatus which is insensitive to said passive neutron emission repetitively and during alternate periods to said passive neutron emission determining step until a useful magnitude of signal has been accumulated, which further comprises the steps of: (i) measuring the prompt neutron yield, Y_P; (ii) measuring the delayed neutron yield, Y_D; and (iii) measuring the coincidence prompt neutron yield, Y_C;

(f) solving the following set of four linear equations in four unknowns for the I's, where I_{252} is the actual number of microcuries (μCi) of ^{252}Cf present in said sample and I_{241}, I_{240} and I_{244} represent the actual numbers of millicuries

(mCi) of ^{241}Am, ^{240}Pu and ^{244}Cm present in said sample, respectively, and

$$P_1 = C_1[I_{252} + 0.0351 I_{244} + 0.00283 I_{240} + 0.00154 I_{241}]$$

$$P_2 = C_2[I_{252} + 0.0236 I_{244} + 0.00066 I_{240}]$$

$$P_3 = C_3[I_{252} + 0.0148 I_{244} + 0.00032 I_{240}]$$

$$P_4 = C_4[I_{252} + 0.0076 I_{244} + 0.00015 I_{240}],$$

where

P_1 is said measured background corrected noncoincidence single neutron rate of detection, and P_2, P_3 and P_4 are said measured, background corrected multiply coincident neutron rates of detection for two, three, and four simultaneously formed neutrons, respectively, and C_1, C_2, C_3 and C_4 are the observed multiplicity responses for a 1.0 μCi ^{252}Cf calibration source; and

(g) solving the following set of three linear equations in three unknowns for the M's, where M_{239}, M_{233} and M_{235} are the actual masses present of ^{239}Pu, ^{233}U and ^{235}U, respectively, and C_1, C_2 and C_3 are calibration constants representing the number of prompt neutrons per unit mass of ^{239}Pu, the number of delayed neutrons per unit mass of ^{239}Pu, and the number of coincidence prompt neutrons per unit mass of ^{239}Pu, respectively; Y_P, Y_D and Y_C having been determined in said active neutron emission determining step:

$$Y_P = C_1[M_{239} + 0.67 M_{235} + 0.62 M_{233}]$$

$$Y_D = C_2[M_{239} + 2.02 M_{235} + 0.76 M_{233}]$$

$$Y_C = C_3[M_{239} + 0.70 M_{235} + 0.75 M_{233}].$$

4,483,817

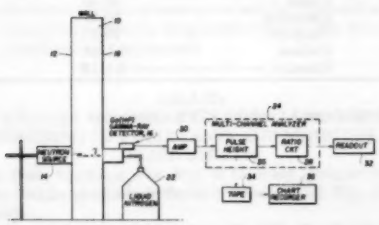
METHOD AND APPARATUS FOR MAPPING THE DISTRIBUTION OF CHEMICAL ELEMENTS IN AN EXTENDED MEDIUM

Larry G. Evans, Laurel, and Jacob I. Trombka, Rockville, both of Md., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jan. 31, 1983, Ser. No. 462,497

Int. Cl.³ G21G 1/06; G21T 1/00

U.S. Cl. 376—159 **37 Claims**



20. Apparatus for mapping the distribution and determining the elemental composition in an extended medium (**10**), comprising in combination:

a neutron source (**14**) adjacent one surface (**12**) of said medium (**10**) and operable to direct neutrons into said medium;

a gamma ray detector (**16**) adjacent the opposite surface (**18**) of said medium (**10**) and being in fixed relationship with the neutron source (**14**) and operable to sense gamma rays (γ) emitted from chemical elements located substantially within a hemispherical region (**20**) of said medium in proximity to the gamma ray detector (**16**), said hemispherical region having a radius substantially equal to said gamma ray mean free distance;

means (**26**) for providing the gamma ray spectrum of characteristic spectral lines of said chemical elements in said hemispherical region (**20**) and indicating the presence of predetermined spectral lines therein; and

means (**28**) for computing the relative intensity of selected spectral lines in relation to the spectral line intensity of a predetermined element.

4,483,818

FUEL ASSEMBLY

Junichi Yamashita, Hitachi; Toshio Kawai, Machida, and Michiro Yokomi, Naka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

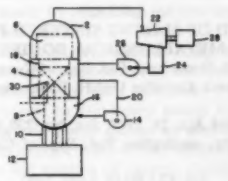
PCT No. PCT/JP79/00038, § 371 Date Nov. 13, 1979, § 102(e) Date Nov. 13, 1979, PCT Pub. No. WO79/00742, PCT Pub. Date Oct. 4, 1979

PCT Filed Feb. 19, 1979, Ser. No. 179,284

Claims priority, application Japan, Mar. 13, 1978, 53-28911

Int. Cl.³ G21C 3/32

U.S. Cl. 376—435 **4 Claims**



1. A fuel assembly comprising a plurality of fuel rods which, at the initial time of assembly of the fuel rods into the fuel assembly, are (1) new, having not been previously utilized in a nuclear reactor core, and (2) vertically arranged in an axial direction in a manner that the mean infinite multiplication factor of an upper region of the fuel assembly in the core is lower in relationship to the mean infinite multiplication factor of a lower region, whereby said fuel assembly is sufficiently different in said two regions to avoid a power output peak in an upper part of the reactor core in any region of high burn-up degree where the mean burn-up of fuel is higher than 30,000 MWD/T.

4,483,819

PRODUCTION OF HIGHLY CAPACITIVE AGGLOMERATED VALVE METAL POWDER AND VALVE METAL ELECTRODES FOR THE PRODUCTION OF ELECTROLYTIC CAPACITORS

Wolf-Wigand Albrecht, Bad Harzburg, and Uwe Papp, Goslar, both of Fed. Rep. of Germany, assignors to Hermann C. Starck Berlin, Berlin, Fed. Rep. of Germany

Filed Jul. 19, 1982, Ser. No. 399,522

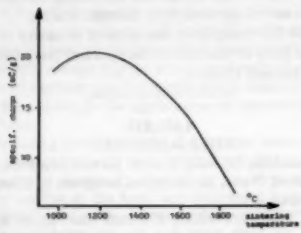
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1981, 3130392

Int. Cl.³ B22F 3/10, 1/00, 9/00

U.S. Cl. 419—2 **6 Claims**

1. A process for the production of agglomerated tantalum powder, said tantalum being essentially pure and designed for use in an anode for an electrolytic capacitor with high specific charge and low leakage current, which comprises heating individual particles of said tantalum admixed with solid particles of a metallic reducing agent in the presence of an inert gas or under high vacuum at a temperature range of about 800° C. to about 1200° C. for a sufficient time that agglomeration of the tantalum powder occurs, and removing the reaction products of the reducing agent and the tantalum and any unreacted

reducing agent from the agglomerated tantalum powder by subsequent reaction with an inorganic acid, said metallic reducing agent being selected from the group consisting of aluminum, calcium and magnesium.



3. A sintered anode for electrolytic capacitors produced by sintering agglomerated tantalum powder obtained by the process according to claim 1.

4,483,820

METHOD OF MAKING SINTERED POWDER METALLURGICAL BODIES

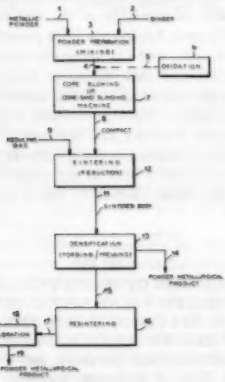
Bernhard Schelb, Remscheid, Fed. Rep. of Germany, assignor to Sintermetallwerk Krebsöge GmbH, Radevormwald, Fed. Rep. of Germany

Filed Jan. 29, 1981, Ser. No. 230,103

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1980, 3004209

Int. Cl.³ B22F *1/00, 3/00*

U.S. Cl. 419—28 **8 Claims**



1. A method of making a powder metallurgical product of high homogeneity and reproducibility which comprises the steps of:

(a) forming a green compact of substantially the shape of said product by

entraining a powder metallurgical mass consisting predominantly of particles of a metallic material and between about 1% to about 10% by weight of an organic binder in compressed air, and

directing the compressed air entrained mass into a shaping sleeve thereby compacting said mass with high kinetic energy into a compact form in a foundry type core forming machine with particles in metal-to-metal contact held together by said binder in a coherent body;

(b) removing said green compact from said form; and

(c) sintering the green compact removed from said form outside of any containment.

8. A method of operating a foundry type core forming machine which comprises the steps of feeding a mass consisting predominantly of metal particles and between about 1% to about 10% by weight of a phenolic resin foundry sand binder to said machine and entraining said mass by compressed air in said machine to form a green compact of said material therein whereby said compact can be sintered outside said form.

4,483,821

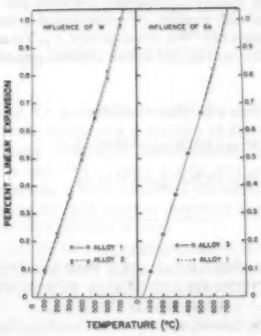
COBALT-CHROMIUM DENTAL ALLOYS

Arun Prasad, Cheshire, Conn., assignor to Jeneric Industries, Inc., Wallingford, Conn.

Filed Dec. 27, 1982, Ser. No. 453,135

Int. Cl.³ C22C *19/07*

U.S. Cl. 420—437 **4 Claims**



1. A cobalt-chromium dental alloy for use is porecelain-fused-to-metal restorations consisting essentially of about:

Element	Weight Percent
Cobalt	40–60
Chromium	20–35
Tungsten	10–20
Gallium	3–10
Rhenium	0.1–1.0

and from about 1 to about 1.75% aluminum.

4,483,822

NICKEL ALLOY

LeRoy H. Houghton, Toledo, Ohio, assignor to Champion Spark Plug Company, Toledo, Ohio

Filed Aug. 6, 1982, Ser. No. 406,034

Int. Cl.³ C22C *19/03*

U.S. Cl. 420—456 **3 Claims**

1. An alloy consisting essentially of from 0.9 to 1.5 percent of ruthenium, from 0.9 to 1.5 percent of manganese, and 97 to 98.2 percent of nickel.

4,483,823

CHEMICAL ANALYZER EQUIPPED WITH REAGENT COLD-STORAGE CHAMBER

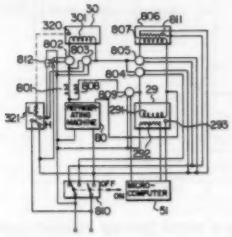
Hiroshi Umetsu, Katsuta; Hirotaka Sato, Hitachi; Katsuji Yamashita, and Yoshimitsu Shibano, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 2, 1982, Ser. No. 414,387

Claims priority, application Japan, Sep. 4, 1981, 56-138444

Int. Cl.³ G01N *35/00*

U.S. Cl. 422—63 **8 Claims**



1. A chemical analyzer comprising:

a reaction bath containing a liquid for immersing therein an array of reaction cups, said reaction cups containing a sample to be analyzed and a reageant;

means for analyzing said sample, with said reagent, operatively associated with said reaction cups;

refrigerant conduit means including first and second series-connected evaporators for supplying a refrigerant from a refrigerating machine to said second evaporator through said first evaporator and then returning said refrigerant to said refrigerating machine;

reagent cold-storage means having a chamber capable of retaining a plurality of reagent tanks, said first evaporator being disposed in said reagent cold-storage means, air in said chamber being cooled by said first evaporator so as to be kept at a predetermined temperature;

liquid bath means for maintaining said liquid supplied to said reaction bath at a predetermined temperature in the vicinity of ordinary temperature, said second evaporator being disposed in said liquid bath means and;

bypass conduit means providing one flow path in parallel with said first evaporator and another flow path in parallel with said second evaporator whereby said refrigerant is allowed to by-pass at least one of said first and said second evaporators when the temperature therein falls below the predetermined temperature.

4,483,824

METHOD AND APPARATUS FOR LONG-TERM MONITORING OF POLLUTANTS AND MOISTURE IN A FLUID STREAM

Hans Pink, Starnberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Division of Ser. No. 199,946, Oct. 23, 1980, abandoned. This application Oct. 13, 1982, Ser. No. 434,066

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1979, 2946402; Nov. 16, 1979, 2946424

Int. Cl.³ G01N *7/02*

U.S. Cl. 422—92 **3 Claims**

1. An apparatus for long-term monitoring of select pollutants and/or moisture in a fluid stream comprising:

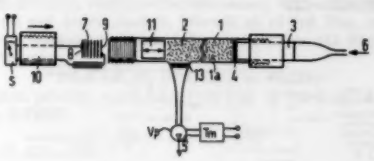
a reaction housing having an internal tubular confinable reaction space filled with a chemical capable of reacting with a select pollutant and/or moisture;

a fluid inlet and a fluid outlet defined in said housing and positioned in spaced relationship to one another, said inlet and outlet being in communication with each other via said reaction space;

a pressure-sensitive sensing means positioned in one end region of said reaction space in a generally opposed relationship to said fluid inlet and in spaced relationship to said fluid outlet and in a pressure sensing relationship to said chemical in said space;

an electrical resistance measuring means operationally associated with said pressure-sensitive sensing means;

an electrically powered vacuum pump means operationally associated with said fluid outlet; and



an elapsed-time indicator means functionally associated with said pump means for measuring the total operative time of said pump means;

said elapsed-time indicator or means comprising a capillary tube containing a copper salt solution therein, said capillary tube being electrically connected to leads passing electrical current to said pump means whereby, during operation of said pump means, an amount of copper is deposited on interior walls of said capillary tube in accordance with the amount of current passing through said pump means.

4,483,825

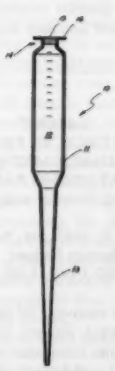
PIPETTE AND FILTER COMBINATION

Keith R. Fatches, 6 Crewe St., Bardwell Park, New South Wales, 2207, Australia

Filed Jul. 9, 1982, Ser. No. 396,563

Int. Cl.³ B01L *3/02*; B01D *33/00*; G01N *1/12*

U.S. Cl. 422—100 **4 Claims**



1. A pipette for separating plasma from a centrifuged blood sample comprising a hollow tubular member terminating at opposite ends and constructed of a resilient, deformable material, a liquid inlet at one end of said hollow tubular member, and a semi-permeable filter located in said inlet wherein said filter permits only plasma to pass therethrough and enter into said hollow tubular member while preventing blood cells from entering said hollow tubular member, and a tapered liquid outlet extending from the other end of said hollow tubular

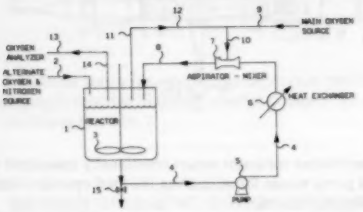
member through which said filtered plasma is expelled by resilient deformation of the hollow tubular member.

4,483,826

COMBINATION REACTION VESSEL AND ASPIRATOR-MIXER

Rector P. Louthan, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 12, 1980, Ser. No. 177,315
Int. Cl.³ B01F *3/04*
U.S. Cl. 422—225 **3 Claims**



1. An apparatus for effecting reaction which comprises in combination a reaction vessel, conduit means in open communication with a point below the level of the top of said vessel for withdrawing reactant mass from said vessel, pump means in open communication with said conduit means and the high pressure side of an aspirator-mixer for pumping said withdrawn mass into said aspirator-miser thus to activate the same, the discharge of said aspirator-mixer being in open communication by means of a conduit with a point at or near said top of said vessel above said level, means for supplying into said aspirator-mixer an oxidizing medium as a reactant for admixture therein with reactants supplied thereto, and means in open communication with the suction side of said aspirator-mixer and a point at the top of said vessel for removing from said vessel undesired reactants therein and into said aspirator-mixer whereby vaporous or gaseous medium in said vessel can be removed from said vessel into said aspirator-mixer.

4,483,827

HYDROMETALLURGICAL PROCESS FOR THE RECOVERY OF VALUABLE METALS FROM SULFIDIC, SILICATE-CONTAINING RAW MATERIALS

Seppo O. Heimala, Pori, Finland, assignor to Outokumpu Oy, Outokumpu, Finland

Filed Jul. 8, 1982, Ser. No. 396,461
Claims priority, application Finland, Aug. 26, 1981, 812642
Int. Cl.³ C01G *3/00, 53/00, 9/00, 45/00*
U.S. Cl. 423—28 **6 Claims**

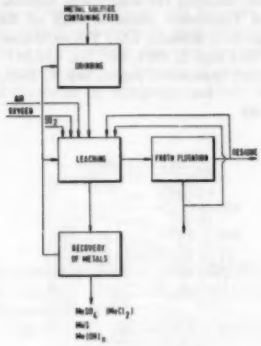
1. A process for the recovery of metals selected from the group consisting of nickel, copper, zinc, manganese, cobalt, aluminum and magnesium from poor complex ores containing the same as well as and sulfides and silicates, comprising—

(a) Forming a watery slurry of said ore in finely divided form; together with finely divided carbon in an amount of from about 2 to 15% by weight of the slurry, the total solids content of said slurry being from about 40 to 75% by weight of the slurry;

(b) Adjusting the pH of said slurry to form about 2 to 4.5;

(c) Leaching said slurry by introducing an oxygen-containing gas and sulfur dioxide into said slurry under atmospheric conditions;

(d) Separating carbon and metallic sulfides from said slurry by flotation induced by said oxygen-containing gas; and



(e) Separating a metal bearing solution from the residue resulting from the aforesaid steps for recovery of the desired metal.

4,483,828

METHOD OF PRODUCING MANGANESE SULFATE SOLUTIONS OF IMPROVED PURITY

William C. Laughlin, Edmond; Virgil J. Barczak, Oklahoma City; Paul D. Bowerman, Edmond, and Theodore A. Rado, Oklahoma City, all of Okla., assignors to Kerr-McGee Chemical Corporation, Oklahoma City, Okla.

Filed Feb. 8, 1984, Ser. No. 577,995
Int. Cl.³ C01G *45/10*
U.S. Cl. 423—49 **10 Claims**

1. A process for producing manganese sulfate solutions containing low levels of soluble potassium impurity from manganese ores containing potassium impurity, said solutions being suitable for use in the manufacture of electrolytic manganese dioxide comprising:

A. blending a reduced manganese ore, an added source of water soluble aluminum ions and an aqueous acid solution selected from the group consisting of aqueous sulfuric acid and spent aqueous electrolyte containing sulfuric acid to form a digestion mixture having a pH of at least about 4.0,

B. digesting said mixture at temperatures sufficient to form a mixed reaction product comprising a liquid phase of manganese sulfate solution and a solid phase of an admixture of digested ore residue and a particulate complex potassium-aluminum salt byproduct, and

C. recovering said liquid phase of manganese sulfate solution from said mixed reaction product.

4,483,829

PROCESS FOR RECOVERING PROTEINS AND CHROMIUM FROM CHROME-TANNING WASTE

Giuliano Guardini, Via Ca Nove, Isola Vicentina (Vicenza), Italy

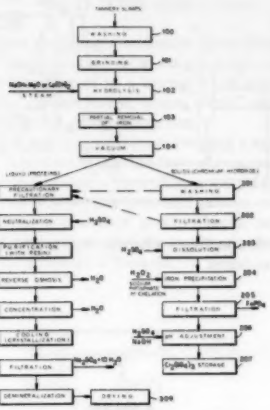
Filed Jan. 27, 1983, Ser. No. 461,501
Claims priority, application Italy, Feb. 2, 1982, 85511 A/82; Jul. 16, 1982, 22416 A/82
Int. Cl.³ C01G *37/02, 37/08;* C14C *3/32;* A23J *1/10*
U.S. Cl. 423—55 **14 Claims**

1. A process for the treatment of chrome-tanning waste products to recover proteins and chromium therefrom, comprising the steps of:

(a) comminuting the waste products to be treated;

(b) hydrolyzing the comminuted products at elevated alkalinity and temperature to produce a resulting suspension of solids in a polypeptide solution, said solids consisting

essentially of chromium hydroxide, the hydrolysis being carried out with NaOH added in a proportion ranging between substantially 4% and 8% by weight of the products of step (a) with a minor proportion of an additive selected from the group which consists of $Ca(OH)_2$ and MgO;



(c) filtering said suspension to separate said solids from said solution;

(d) neutralizing and purifying said solution to provide a proteinaceous nutriment substantially free from chromium; and

(e) separately purifying said solids.

4,483,830

PRODUCTION OF ALUMINA

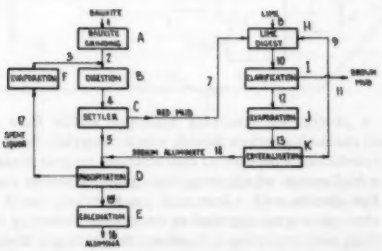
Pearson J. Cresswell, Clifton Hill, and David J. Milne, North Balwyn, both of Australia, assignors to Comalco Limited, Melbourne, Australia

Filed Sep. 3, 1982, Ser. No. 414,588

Claims priority, application Australia, Sep. 10, 1981, PF0711

Int. Cl.³ C01F *7/00*

U.S. Cl. 423—118 **5 Claims**



1. A process for extraction of alumina and soda from bauxite having a high silica content, which includes the steps:

(a) grinding the bauxite, and mixing the ground bauxite with a sodium aluminate liquor;

(b) digesting the mixture of step (a) at elevated temperature and pressure;

(c) separating red mud solids as slurry or filter cake, containing sodium aluminosilicates, from the liquor product of step (b);

(d) mixing the separted red mud solids with a strong caustic soda solution the soda concentration in the reactng mixture being in the range 9 to 20% Na_2O, and the caustic to alumina ratio being greater than 4 with sufficient lime to achieve a stoichiometric ratio with respect to the silica in the mud in the range of 1.8 to 2.2;

(e) digesting the product of step (d) at a temperature in the range of 260° to 320° C. and under pressure of 4 to 9 MPa to dissolve soda and alumina values;

the amount of caustic solution used in step (d) being such that the final A/C, of the digested liquor product of step (e) is in the range of 0.15 to 0.2.

4,483,831

METHOD AND APPARATUS FOR CALCINING LIME

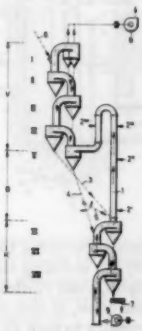
Martin Schmidt, Bochum-Oberdahlhausen; Walter Köhler, Bochum, and Andris Abelitis, Rösrath, all of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Jul. 27, 1982, Ser. No. 402,315

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1981, 3131023

Int. Cl.³ C01F *11/06*

U.S. Cl. 423—175 **8 Claims**



1. In a method for calcining calcium bearing raw material in which finely divided raw material is successively treated in a preheating zone, a generally vertical calcining zone, and a cooling zone wherein the finely divided raw material is preheated in said preheating zone by exhaust gases from said calcining zone, passed through said calcining zone, and then in suspension through said cooling zone, the entire amount of cooling air being supplied directly from the cooling zone into the calcining zone as combustion air, the improvement which comprises:

adding fuel to said generally vertical calcining zone at a plurality of locations following one another in the upward and onward flow direction of the gas passing through said calcining zone, introducing the preheated raw material closely adjacent to the lowest of said locations for immediate calcining effect at said lowest location, and passing the preheated raw material vertically upwardly through the calcining zone in concurrent flow with the fuel and while suspended in the gas stream.

4,483,832

RECOVERY OF HEAT VALUES FROM VITIATED GASEOUS MIXTURES

Robert M. Schirmer, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 30, 1982, Ser. No. 363,680

Int. Cl.³ B01D *53/34*

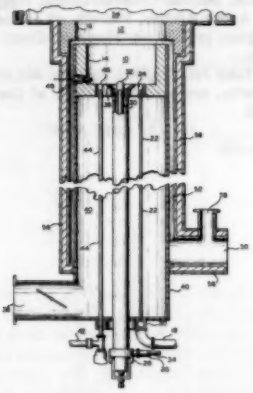
U.S. Cl. 423—210 **32 Claims**

1. A method of recovering heat values from a vitiated gaseous mixture, other than products of the present method, con-

taining significant amounts of at least one of oxygen and combustibles together with inert diluents, comprising:

(a) burning a supplemental fuel, in a first burning step in a first combustion zone, in the presence of a first volume of air in an amount less than the stoichiometric amount necessary for combustion of all of said supplemental fuel to produce combustion products containing unburned and partially burned supplemental fuel;

(b) mixing said vitiated gaseous mixture and a second volume of air with said combustion products of said first burning step adjacent the downstream end of said first combustion zone;



(c) said second volume of air being sufficient to produce a total amount of oxygen, including said first volume of air, oxygen, if any, present in said vitiated gaseous mixture and said second volume of air, at least equal to the stoichiometric amount necessary to burn all of said supplemental fuel and all of the combustibles, if any, present in said vitiated gaseous mixture; and

(d) burning the combustibles, if any, present in said vitiated gaseous mixture, and the unburned and partially burned fuel content of said combustion products of said first burning step, in a second burning step in a second combustion zone, in the presence of said second volume of air.

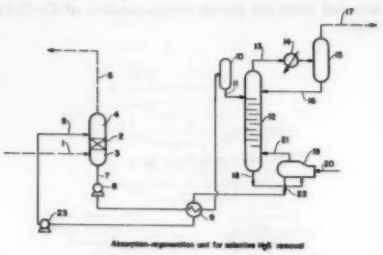
4,483,833

PROCESS FOR SELECTIVE REMOVAL OF H_2S FROM MIXTURES CONTAINING H_2S AND CO_2 WITH HETEROCYCLIC TERTIARY AMINOALKANOLS

Eugene L. Stogryn, Edison; David W. Savage, Summit, and Guido Sartori, Linden, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jan. 18, 1982, Ser. No. 339,882
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—228 **23 Claims**

1. A process for the selective absorption of H_2S from a normally gaseous mixture containing H_2S and CO_2 comprising contacting said normally gaseous mixture with an absorbent amino-compound-containing solution comprising a nitrogen heterocyclic tertiary aminoalkanol or nitrogen heterocyclic tertiary aminoetheralkanol having a pK_a of at least about 8.6



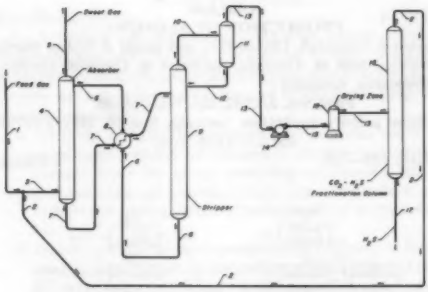
under kinetic conditions whereby H_2S is selectively absorbed from said mixtures.

4,483,834

GAS TREATING PROCESS FOR SELECTIVE H_2S REMOVAL

Douglas A. Wood, Houston, Tex., assignor to UOP Inc., Des Plaines, Ill.

Filed Feb. 3, 1983, Ser. No. 463,364
Int. Cl.³ C01B *17/16*
U.S. Cl. 423—228 **17 Claims**



1. A process for removing hydrogen sulfide from a gas stream containing carbon dioxide which comprises the steps of:

(a) contacting a hereinafter characterized recycle stream and a feed stream which comprises hydrogen sulfide and carbon dioxide with a lean acid gas absorbing liquid in an absorption zone operated at absorption-promoting conditions and separating a resultant rich acid gas absorbing liquid from a product gas stream;

(b) passing rich acid gas absorbing liquid from said absorption zone into a regeneration zone operated at regeneration conditions and thereby forming lean acid gas absorbing liquid, which is returned to the absorption zone, and a net regeneration zone gas stream comprising hydrogen sulfide and carbon dioxide; and,

(c) fractionating the regeneration zone gas stream in the absence of absorbing liquid in a fractionation zone operated at fractionating conditions and therein separating the same into a net fractionation zone overhead stream, which is at least partially employed as said recycle stream, and a net bottoms stream comprising hydrogen sulfide.

4,483,835

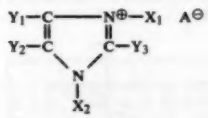
PROCESS FOR PREPARING MOLECULAR SIEVES USING IMIDAZOLE TEMPLATE

Stacey I. Zones, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

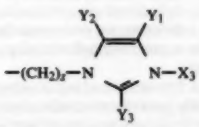
Filed Nov. 14, 1983, Ser. No. 550,840
Int. Cl.³ C01B 33/20
U.S. Cl. 423—277 10 Claims

1. A method for preparing a molecular sieve having a mole ratio of a first oxide selected from silicon oxide, germanium oxide, and mixtures thereof to a second oxide selected from aluminum oxide, gallium oxide, boron oxide, and mixtures thereof greater than 15 which comprises:

(a) preparing an aqueous mixture containing a mole ratio of a source of a first oxide selected from silicon oxide, germanium oxide and mixtures thereof, to a source of a second oxide selected from aluminum oxide, gallium oxide, boron oxide, and mixtures thereof greater than 2, said mixture also containing sources of an imidazole salt characterized by the general structural formula:



wherein X_1 and X_2 independently represent a branched or unbranched alkyl containing from 1 to 10 carbon atoms; a branched or unbranched alkyl containing from 1 to 10 carbon atoms substituted by one or more hydroxy, bromo, chloro or iodo; cycloalkyl containing from 5 to 10 carbon atoms; cycloalkyl containing 5 to 10 carbon atoms substituted by branched or unbranched lower alkyl-containing from 1 to 4 carbon atoms; phenyl; benzyl; phenyl substituted by one or more lower alkyl containing 1 to 4 carbon atoms; benzyl substituted by one or more lower alkyl containing 1 to 4 carbon atoms, or a moiety represented by the formula:



wherein

z is an integer of from 1 to about 20, X_3 independently represents the same moieties as represented by X_1, and X_2, and Y_1, Y_2 and Y_3 are as defined below,

Y_1, Y_2, and Y_3 independently represent hydrogen, halo, hydroxy, and lower alkyl, either branched or unbranched, containing from 1 to about 4 carbon atoms, or alternately Y_1 and Y_2 may be connected by the bridging group C_4H_4 to form a benzimidazole with the imidazole ring, $A^{\ominus}$ represents an anion which is not detrimental to the formation of the zeolite, and

wherein further said aqueous mixture has a mole ratio of hydroxyl ion to the source of said first oxide within the range of from about 0.2 to about 0.6;

(b) maintaining the aqueous mixture at a temperature of at least 100° C. until the crystals of the desired molecular sieve form; and

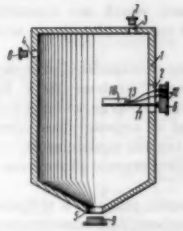
(c) recovering the crystals of the molecular sieve.

4,483,836

METHOD OF PRODUCING DIAMOND AND/OR DIAMOND-LIKE MODIFICATIONS OF BORON NITRIDE

Gennady A. Adadurov, Moscow; Tamara V. Bavina, Moskovskaya; Oleg N. Breusov, Moskovskaya; Viktor N. Drobyshev, Moskovskaya; Mikhail J. Messinev, Moscow; Alexandra I. Rogacheva; Alexandr V. Ananiin, both of Moskovskaya; Vladimir N. Apollonov, Moscow; Anatoly N. Dremin; Valentin N. Doronin, both of Moskovskaya; Fedor I. Dubovitsky, Moscow; Lidia G. Zemlyakova, Moskovskaya; Sergei V. Pershin, Moskovskaya, and Viktor F. Tatsy, Moskovskaya, all of U.S.S.R., assignors to Institut Khimicheskoi Fiziki Akademii Nauk SSSR, U.S.S.R.

PCT No. PCT/SU80/00136, § 371 Date Mar. 18, 1982, § 102(e) Date Mar. 18, 1982, PCT Pub. No. WO82/00458, PCT Pub. Date Feb. 18, 1982
PCT Filed Jul. 31, 1980, Ser. No. 361,901
Int. Cl.³ C01B 21/064
U.S. Cl. 423—290 9 Claims



1. A method for producing diamond and/or diamond-like modifications of boron nitride by detonating in a container, a charge of a particulate admixture of an explosive and the material to be transformed, said material to be transformed selected from the group consisting of:

(a) carbon to produce diamond,

(b) boron nitride to produce diamond-like modifications of boron nitride, and

(c) carbon and boron nitride to produce a mixture of diamond and diamond-like modifications of boron nitride;

wherein said explosive upon detonation produces dynamic pressures varying from about 3 to 60 GPa and temperatures varying from about 2,000° to 6,000° K.

4,483,837

PROCESS FOR MAKING CALCIUMMONOHYDROGEN PHOSPHATE DIHYDRATE

Josef Cremer, Hürth; Josef Holz, Grevenbroich; Hans Haas, Swisttal Strassfeld, and Friedrich Schulte, Mechernich, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 24, 1983, Ser. No. 507,784
Claims priority, application Fed. Rep. of Germany, Jul. 23, 1982, 3227523
Int. Cl.³ C01B 15/16, 25/26
U.S. Cl. 423—309 18 Claims

1. A process for making calciummonohydrogen phosphate dihydrate with a degree of whiteness of about 100 percent when measured when using an electric remission photometer and monochromatic light with a wavelength of 577 monometers from pure phosphoric acid and naturally occurring limestone which comprises: suspending a fine-particulate limestone containing contaminants impairing the degree of whiteness in water with the resultant formation of a first suspension; mixing said first suspension at temperatures between 0° and 60° C. with phosphoric acid and thereby establishing a Ca/P-ratio of 0.20 up to 0.57, the phosphoric acid being added in quantities so as to prevent the resulting mixture from foaming over;

allowing the evolution of CO_2 to subside and separating said contaminants from the mixture with the resultant formation of a clear colorless acid solution; jointly introducing, with agitation, said solution and a second aqueous suspension of pure alkaline earth metal compounds selected from the group consisting of carbonates, hydroxides, and mixtures thereof into a reaction zone at a reaction temperature of 20° to 45° C. so as to establish a pH-value initially of 2.0 to 5.0 and then, towards the end of the reaction, of 6.0 to 8.0; and filtering off, washing out, and drying the calciummonohydrogen phosphate dihydrate.

4,483,838

TREATMENT OF CONTAMINATED PHOSPHORIC ACID TO RECOVER USABLE ACID THEREFROM

Donald L. Sculthorpe, Las Vegas, Nev., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Sep. 21, 1983, Ser. No. 534,421
Int. Cl.³ C01B *25/16*
U.S. Cl. 423—321 R **8 Claims**

1. A process for the treatment of phosphoric acid containing organic contaminants which are substantially insoluble in phosphoric acid, to recover phosphoric acid therefrom, comprising:

(a) maintaining the contaminated phosphoric acid at a temperature of from 80° to about 180° C. for a time sufficient to permit separation into an acidic phase comprising phosphoric acid and an organic phase comprising the major portion of the organic contaminants;

(b) withdrawing the organic phase from contact with the acidic phase;

(c) heating the acidic phase to a temperature sufficient to produce a phosphoric acid concentration of at least 85%; and

(d) stripping the acidic phase from step (c) with steam to remove malodorous organic contaminants.

4,483,839

PROCESS FOR PRODUCING SILICON NITRIDE

Masahiro Sugiura, Aichi; Toshio Kandori, Seto, and Haruo Doi, Nagoya, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed Jul. 18, 1983, Ser. No. 514,754
Claims priority, application Japan, Aug. 19, 1982, 57-143600
Int. Cl.³ C01B *21/068*
U.S. Cl. 423—344 **6 Claims**

1. A process for producing silicon nitride, comprising:

immersing chaff in a solution of an acid for a time sufficient to remove impurity elements therefrom;

washing said chaff with water;

drying said chaff;

heating said chaff to carbonize it; and

reducing silicon from said carbonized chaff and simultaneously nitriding said silicon.

4,483,840

SYNTHETIC CARBONACEOUS GRANULES HAVING HIGH MECHANICAL CHARACTERISTICS

Jean-Paul Delhay, Villefontaines; Daniel Dumas, St. Priest, and Paul Lacroix, Lyons, all of France, assignors to Societe des Electrodes et Refractaires, Paris, France

Continuation of Ser. No. 352,999, Feb. 26, 1982, abandoned. This application Nov. 14, 1983, Ser. No. 551,568
Claims priority, application France, Aug. 29, 1979, 79 22253
Int. Cl.³ C01B *31/00*
U.S. Cl. 423—445 **7 Claims**

1. A process for the preparation of synthetic carbonaceous granules of improved strength and electrical conductivity from fines of natural carbonaceous materials having a volatile material content lower than 20% comprising the steps of:

(a) forming pellets comprising from about 50 to about 90% by weight of natural carbonaceous materials having a granulometry of less than about 2 mm and from about 10 to about 30% by weight of a hydrocarbonaceous binder;

(b) subjecting the green pellets to a first thermal treatment under conditions in which they are exposed as individual pellets to an oxidizing gaseous atmosphere from about 1 to about 10 minutes at a temperature of from about 650° to about 1000° C. to volatilize a portion of the binder in the outer layer of the pellets wherein a thin, hard layer of carbonaceous material develops at the outer layer of the pellets whereby the pellets can further be processed as a fluent mass;

(c) calcining the pellets derived as in (b) as a fluent mass of individual pellets at a temperature between about 1200° and about 2400° C.; and

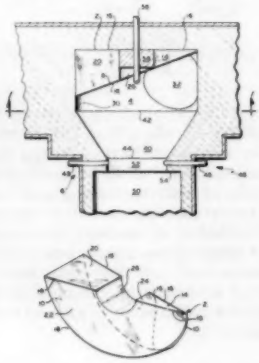
(d) crushing the calcined pellets to obtain synthetic granules having a desired granulometric distribution.

4,483,841

CARBON BLACK PRODUCTION

William R. King, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 29, 1983, Ser. No. 490,105
Int. Cl.³ C01B *31/02*; C09C *1/48*
U.S. Cl. 423—456 **7 Claims**



1. A process for producing carbon black in a reactor comprising a generally cylindrical precombustion zone having an upstream end and a downstream end coaxially connected by its downstream end to a generally cylindrical pyrolysis zone, said process comprising:

(a) introducing a first stream of hot combustion gases generally tangentially into the precombustion zone;

(b) introducing a second stream of hot combustion gases generally tangentially into the precombustion zone, said second stream of hot combustion gases being introduced into the precombustion zone in a co-rotational direction with the first stream of hot combustion gases through an inlet into the precombustion zone which is spaced apart from the inlet through which the first stream of hot combustion gases is introduced into the precombustion zone by an angle of about 180°;

(c) deflecting the first stream of hot combustion gases toward the pyrolysis zone by a first helical ramp positioned at the upstream end of the precombustion zone;

(d) deflecting the second stream of hot combustion gases toward the pyrolysis zone by a second helical ramp positioned at the upstream end of the precombustion zone;

(e) flowing the deflected first stream of hot combustion gases and the deflected second stream of hot combustion gases from the first ramp and the second ramp and into the pyrolysis zone; and

(f) mixing a carbonaceous feedstock with the hot combustion

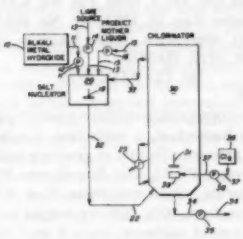
gases for pyrolysis in the pyrolysis zone to form carbon black.

4,483,842

METHOD FOR REMOVING DIBASIC CALCIUM HYPOCHLORITE SCALE

David A. Stermole, New Martinsville, W. Va., and Robert B. Simmons, Norton, Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 1, 1983, Ser. No. 518,988
Int. Cl.³ C01B *11/06*
U.S. Cl. 423—474 **10 Claims**



1. In the process of preparing calcium hypochlorite by reaction of a source of lime, alkali metal hydroxide and chlorine, wherein an alkaline aqueous process stream containing a source of lime is introduced into a first vessel and wherein the conditions in said first vessel are such that dibasic calcium hypochlorite is deposited on the surface of said first vessel, thereby forming a scale of dibasic calcium hypochlorite thereon, wherein process liquor is removed from said first vessel and forwarded to a second vessel in the process containing process liquor less alkaline than the process liquor in the first vessel, and wherein process liquor from the second vessel is recycled to the first vessel and also removed therefrom for further treatment in the process, the improvement which comprises removing dibasic calcium hypochlorite scale from the first vessel by the steps of:

(a) discontinuing introducing said lime-containing alkaline process stream into said first vessel and discontinuing removing process liquor from the second vessel for further treatment in the process,

(b) continuing to forward process liquor from the first vessel to the second vessel and to recycle process liquor from the second vessel to the first vessel, thereby establishing a circulating aqueous alkaline medium of substantially the same pH,

(c) introducing hydrogen ions into the circulating aqueous alkaline medium while maintaining the pH thereof at at least 7 until the desired amount of dibasic calcium hypochlorite scale present on the surfaces of the first vessel is solubilized, and thereafter

(d) resuming the introduction of said lime-containing alkaline process stream into said first vessel and the removal of process liquor from said second vessel for further treatment in the process.

4,483,843

DESULFURIZATION PROCESS FOR HYDROGEN SULFIDE CONTAINING GASES

Takezo Sonoda; Fumioki Shimoyama; Teruhisa Kaziwara, and Takahisa Sato, all of Himeji, Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

Filed Aug. 16, 1982, Ser. No. 408,523
Int. Cl.³ C01B *17/05*
U.S. Cl. 423—573 R **13 Claims**

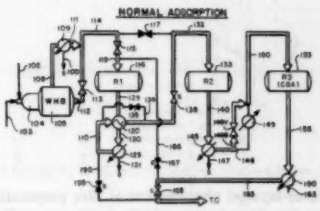
1. A desulfurization process for hydrogen sulfide-containing gases, which comprises contacting an alkaline aqueous medium containing a naphthoquinone sulfonate at a concentration of 500–4000 ppm, a water-soluble compound of at least one polyvalent metal selected from the group consisting of iron, manganese, vanadium and copper at a concentration of 300–3000 ppm, and a water-soluble high molecular compound having weight-average molecular weight from 300 to 500 at a concentration of 0.1–10 gm/l with a hydrogen sulfide-containing gas thereby causing the hydrogen sulfide in said gas to be absorbed by said aqueous medium and subsequently contacting said aqueous medium now containing the absorbed hydrogen sulfide with a molecular oxygen-containing gas thereby separating elementary sulfur from said hydrogen sulfide.

4,483,844

SYSTEM AND PROCESS FOR PRODUCING ELEMENTAL SULFUR

Boyd E. Cabanaw, Tulsa, Okla., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jul. 29, 1983, Ser. No. 518,512
Int. Cl.³ C01B *17/04*
U.S. Cl. 423—574 R **12 Claims**



1. In a Cold Bed Adsorption process of the type including in the adsorption mode the steps of reacting acid gas and air in a thermal reaction zone, reacting the resulting gas in three catalytic reaction zones arranged in series and maintained at progressively reduced temperatures, the last of said catalytic reaction zones being periodically maintained below the dewpoint of sulfur, the effluent from the thermal reaction zone and a first catalytic reaction zone being cooled to recover sulfur and the gas being then heated to a desired temperature and fed to the subsequent reaction zone, the improvement comprising:

in the adsorption mode, maintaining a second catalytic reaction zone at a sulfur dewpoint approach below about 25° F. (14° C.) and as low as about 1° to 15° F. (0.5° to 8° C.) to diminish sulfur loading rate and temperature rise in the third catalytic reaction zone; and

in the regeneration mode, feeding the gas from the thermal reaction zone to the second catalytic reaction zone to regenerate the catalyst therein, cooling the effluent from the second catalytic reaction zone and removing sulfur, then heating the effluent and feeding the heated effluent therefrom to the third catalytic reaction zone to regenerate the catalyst therein.

4,483,845

PROCESS FOR PRODUCING ARSENOUS ACID

Shunichi Kasai, Ibaragi; Takashi Ogata, Saitama; Teruo Tamanoi, and Hiroshi Hosaka, both of Saitama, all of Japan, assignors to Nippon Mining Co., Ltd., Tokyo, Japan

Filed Sep. 29, 1982, Ser. No. 427,346
Claims priority, application Japan, Oct. 2, 1981, 56-156201
Int. Cl.³ C01B *27/00*
U.S. Cl. 423—617 **4 Claims**

1. A process for producing arsenous acid which comprises bringing an organic solvent containing 5 valent arsenic into contact with a reducing agent and in the presence of water or an aqueous solution to produce arsenous acid directly from said organic solvent, the volume ratio of organic solvent con-

taining 5 valent arsenic to water being in the range of from 50/1 to 1/2.

4,483,846

LONG-LASTING THREE-LAYERED PHARMACEUTICAL FILM PREPARATIONS

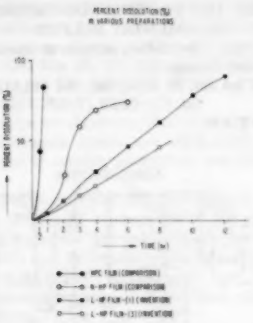
Tatsushi Koide, Yawata; Seiei Sasatani, Matsubara, and Kohji Inaba, Neyagawa, all of Japan, assignors to Ono Pharmaceutical Co., Ltd., Kyoto, Japan

Filed Feb. 7, 1983, Ser. No. 464,174

Claims priority, application Japan, Feb. 5, 1982, 57-16331

Int. Cl.³ A01N *25/26, 25/34*

U.S. Cl. 424—19 **10 Claims**



1. A three-layered pharmaceutical film preparation which comprises one drug-storing middle layer comprising at least one of each of (a) polyvinylprrolidone, (b) hydroxypropyl cellulose, (c) plasticizer, (d) organic acid and (e) prostaglandin analogue, and two release-controlling layers, one on each side of said middle layer, comprising at least one of each of (a) hydroxypropyl cellulose and (b) plasticizer, additionally containing or not containing at least one prostaglandin analogue.

4,483,847

PROCESS FOR THE MANUFACTURE OF A PHARMACEUTICAL COMPOSITION WITH A RETARDED LIBERATION OF ACTIVE MATERIAL

Helmut Augart, Waldkirch, Fed. Rep. of Germany, assignor to Warner-Lambert Company, Morris Plains, N.J.

Continuation of Ser. No. 358,746, Mar. 16, 1982, , which is a continuation of Ser. No. 277,559, Jun. 26, 1981, abandoned. This application Sep. 20, 1983, Ser. No. 534,020

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1980, 30244167

Int. Cl.³ A61K *9/26, 9/42*

U.S. Cl. 424—22 **9 Claims**

1. An improved process for the production of a pharmaceutical composition with a retarded liberation of active material, including active material which is unstable above 70° C., wherein the improvement comprises

(a) mixing said active material and finely divided particle form with finely divided particles of high melting and a low melting lipid or lipoid component, in a weight ratio of 1:9 to 1 wherein the melting point of the high melting component is above 70° C. and the melting point of the low melting component is from about 30° C. to below about 70° C. wherein the lipid or lipoid component is a fatty alcohol, containing 13–20 carbon atoms or a mixture thereof, a fatty acid, a lipophilic stearate, a hydrogenated vegetable oil or mono-, di- and triester of glycerol with palmitic acid or stearic acid or mixtures thereof or a vegetable, animal, mineral or synthetic wax.

(b) bringing the mixture to a temperature which is above the melting point of the low melting component but below the melting point of the high melting component thereby embedding particles of the high melting component and active material in the low melting component like gravel in concrete in cement and

(c) after melting of the low melting component, allowing the mixture to cool below the melting point thereof.

4,483,848

DENTRIFICE COMPOSITION COMPRISING MICROBIAL HETEROPOLYSACCHARIDE

Roger B. Cox, Reading, and David C. Steer, Wirral, both of England, assignors to Lever Brothers Company, New York, N.Y.

Division of Ser. No. 331,705, Dec. 16, 1981, , which is a division of Ser. No. 166,220, Jul. 7, 1980, Pat. No. 4,329,448. This application Aug. 23, 1982, Ser. No. 410,780

Claims priority, application United Kingdom, Jul. 10, 1979, 7924040; Dec. 20, 1979, 7943878

Int. Cl.³ A61K *7/16*

U.S. Cl. 424—49 **2 Claims**

1. A dentifrice composition exhibiting pseudoplasticity comprising water, a humectant, a surfactant, a solid particulate abrasive and an amount effective to generate said pseudoplasticity of Biopolymer PS 87, said Biopolymer PS 87 being a heteropolysaccharide which comprises from 40 to 45% by weight of glucose, from 10 to 20% by weight galactose, from 25 to 30% by weight mannose, from 6 to 13% by weight glucuronic acid and from 0 to 1.5% by weight fucose, a 1% by weight solution of said Biopolymer PS 87 having pseudoplastic properties, a consistency at 20° C. of at least 150 poise and a yield stress value at 20° C. of at least 30 dynes/cm^2.

4,483,849

STABILIZATION AND PURIFICATION OF INTERFERON WITH PROPYLENE GLYCOL, RESULTING IN A NON-TOXIC PRODUCT

William A. Carter, and Gerald Silver, both of HEM Research, 5451 Randolph Rd., Rockville, Md. 20852

Filed Jan. 7, 1983, Ser. No. 430,755

Int. Cl.³ A61K *45/02;* **C07G** *7/00*

U.S. Cl. 424—85 **6 Claims**

1. A process for purifying and stabilizing interferon, comprising the steps of:

adding an interferon-containing fluid to a solid purification matrix;

eluting said interferon from said matrix with a solution containing propylene glycol; and

storing said interferon in a solution containing propylene glycol.

4,483,850

N-TERMINAL SUBSTITUTED OLIGOPEPTIDE CONVERTING ENZYME INHIBITORS

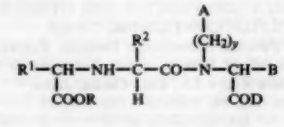
Arthur A. Patchett, Westfield, and William V. Ruyle, Scotch Plains, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 376,363, May 10, 1982. This application Feb. 18, 1983, Ser. No. 466,621

Int. Cl.³ A61K *37/00;* **A01N** *57/00, 43/42, 43/36;* **C07C** *103/52*

U.S. Cl. 424—177 **10 Claims**

1. Compounds having the formula:



(I.)

wherein:

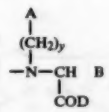
R is hydrogen; loweralkyl; aralkyl; or, aryl;

R^1 is hydrogen; alkyl of from 1 to 12 carbon atoms which include branched, cyclic and unsaturated alkyl groups; sub-

stituted loweralkyl wherein the substituent can be halo, hydroxy, carboxy, carboxamido, loweralkylthio, loweralkoxy, loweralkoxycarbonyl, loweraralkoxycarbonyl, amino, loweralkylamino, lowerdialkylamino; acylamino substituted loweralkylamino wherein the substituent can be halo, hydroxy, alkoxy or cyano; arloweralkylamino; cyclic amino; oxo, thio or ureido; aryloxy; arylthio; aralkyloxy; aralkylthio; benzofused cycloalkyl or bicycloalkyl of from 8–12 carbon atoms; aryl or heteroaryl which may be mono-, di-, or trisubstituted by loweralkyl, hydroxy, loweralkoxy, halo, amino, acylamino, lower alkylthio or aminoloweralkyl; benzofused cycloalkyl or bicycloalkyl of from 8 to 12 carbon atoms; arloweralkyl, arloweralkenyl, heteroloweralkyl and heteroloweralkenyl in which the aryl or heteroaryl rings may be mono-, di-, or trisubstituted by halo, lower alkyl, hydroxy, loweralkoxy, amino, lower alkylamino, diloweralkylamino, aminolower alkyl, acylamino, carboxy, haloloweralkyl, nitro, cyano or sulfonamido; aralkyl or heteroaralkyl which include branched loweralkyl groups; substituted aralkyl or substituted heteroaralkyl which include branched loweralkyl groups wherein the loweralkyl groups can be substituted by amino, acylamino, or hydroxyl and the aryl and heteroaryl groups can be substituted by amino, acylamino, or hydroxyl and the aryl and heteroaryl groups can be substituted by halo, dihalo, loweralkyl, hydroxy, loweralkoxy, aryloxy, aroyl, arylthio, amino, aminoloweralkyl, loweralkanoylamino, aroylamino, lowerdialkylamino, loweralkylamino, hydroxy, hydroxyloweralkyl, trihaloloweralkyl, nitro, cyano, or sulfonamido; any of the arloweralkyl or alkenyl and heteroloweralkyl or alkenyl groups described above in which the aryl or heteroaryl ring is partially or completely hydrogenated; substituted loweralkyl having the formula $R_A{}^1(CH_2)_n—Q—(CH_2)_m$ wherein n is 0–2, m is 1–3, $R_A{}^1$ is aryl or heteroaryl optionally substituted by amino, lowerdialkylamino, loweralkylamino, hydroxy, hydroxyloweralkyl, aminoloweralkyl, trihaloloweralkyl, cyano, nitro, sulfonamido, aroyl, loweralkyl, halo, dihalo, and loweralkoxy, and Q is O, S, SO, or SO_2, N—$R_B{}^1$, $CONR_C{}^1$, $NR_C{}^1CO$, CH=CH wherein $R_B{}^1$ is hydrogen, loweralkyl, aryl, aralkyl, loweralkanoyl, or aroyl, and $R_C{}^1$ is hydrogen, or loweralkyl;

R_2 is lower alkyl, lower alkenyl, or lower alkynyl; substituted lower alkyl, lower alkenyl or lower alkynyl in which the substituent(s) may be lower cyclo alkyl, halo, hydroxy, amino, amidino, acylamino, carboxylower alkyl amino, carbamoyllower alkylamino, hydroxy lower alkylamino, arylamino arlower alkyl amino or heteroarlower alkylamino; substituted lower alkyloxy alkyl, loweralkyl thio alkyl, and lower alkylaminoalkyl wherein the substituent(s) may be the same as those recited above; arlower alkyl and heteroarlower alkyl which may be substituted by lower alkyl, lower alkyloxy, amino, hydroxy halo or acylamino;

in the group



y is 0 to 4

A is

(a) alkyl, including branched unsaturated and cyclic alkyl of 3 to 8 carbon atoms;

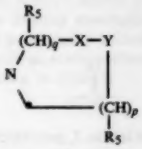
(b) benzofused cycloalkyl or bicycloalkyl of 8 to 12 carbon atoms;

(c) aryl or heteroaryl groups which may be mono-, di-, or trisubstituted by loweralkyl, loweralkoxy, halo, amino, acylamino, hydroxy, acyl or acyloxy, and corresponding groups in which the aryl or heteroaryl groups are partially or completely hydrogenated;

(d) lower alkyl including branched and unsaturated groups which may be substituted by aryl or heteroaryl groups and corresponding groups in which the aryl or heteroaryl rings are partially or completely hydrogenated;

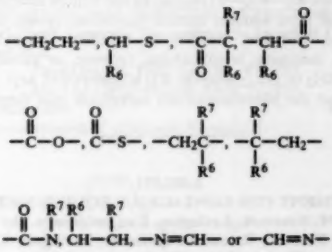
B is hydrogen or loweralkyl or

A and B may be joined, together with the carbon atoms to which they are attached to form a ring having the formulae:



(1)

wherein X and Y taken together are



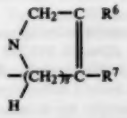
wherein:

R^5 and R^6 individually are hydrogen; lower alkyl; cycloalkyl; aryl; aralkyl; heteroaryl; lower alkyloxy, lower alkylthio; aryloxy; arylthio; arloweralkyloxy; arlower alkylthio; hydroxy; acyloxy; acyllower alkyl; halo; amino; mono- or disubstituted lower alkyl amino; arlower alkylamino; heteroloweralkylamino; acylamino in which the acyl group may be lower alkanoyl, aroyl, heteroaroyl or heterolower alkanoyl; carbamoyl; or N-substituted carbamoyloxy; and wherein any of these groups containing an aromatic ring, said ring may be mono-, di-, or trisubstituted by lower alkyl, lower alkoxy, loweralkylthio, halo, hydroxy, aryl, aryloxy, arylthio or aralkyl; and wherein any of said groups containing an aryl or heteroaryl group in which said groups are partially or completely hydrogenated;

R^7 is hydrogen, loweralkyl, aryl, cycloalkyl, or substituted aryl wherein the substituent can be halo, hydroxy, alkoxy, amino or loweralkyl; or

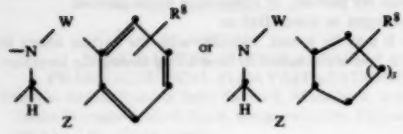
R^6 and R^7 taken together may be oxo, or, together with the atoms to which they are attached form a 3 to 6 membered ring which may contain 0, 1, or 2 atoms of N, S, or O;

p and q are independently 0 to 3;



(2)

wherein R^6 and R^7 are as defined above and s is 0, 1, and 2;



(3)

wherein
W is absent; —CH_2—,

N or S;
Z is —$(CH_2)_t$—, where t is 0 to 2, provided that t may not be O when W is absent; —O—; —N—, or —S—;
R^8 is hydrogen; lower alkyl; loweralkoxy; hydroxy; halo, lower alkylthio; amino; acylamino; or cyano;
p is 1 to 3;
D is an amino acid or amino acid derivative, R_9—R_{11}, or a dipeptide R_9—R_{10}—R_{11} *wherein* R_9 and R_{10} are independently selected from alanine, leucine, isoleucine, lysine, arginine, glycine, histidine, methionine, ornithine, phenylalanine, serine, threonine, trypthophane, tyrosine, or valine, R_{11} is OH, NH_2 or OR_{12} wherein R_{12} is loweralkyl, aryl, or aralkyl; and, the pharmaceutically acceptable salts thereof.

4,483,851

TREATMENT FOR CONTAGIOUS EQUINE METRITIS

Thomas W. Swerczek, Lexington, Ky., assignor to The University of Kentucky Research Foundation, Lexington, Ky.

Filed Aug. 18, 1982, Ser. No. 409,180
Int. Cl.³ A61K *31/70*
U.S. Cl. 424—180 **14 Claims**

7. A method for the treatment of contagious equine metritis in horses which comprises topical application to the external genitalia of horses of an antimicrobial-effective amount of dextrose in an aqueous based mixture including a buffer present in sufficient amounts to provide a pH in the range of about 3.0 to 4.5, and a carrier.

4,483,852

PHARMACEUTICAL COMPOSITIONS CONTAINING A FRACTION EXTRACTED FROM MANDASSI (*CYPERUS ARTICULATUS L.*)

Jean B. Mahaillet, Bondy, and Jean P. Gabriel, Tours St Symphorien, both of France, assignors to Synthelabo, Paris, France

Filed Oct. 7, 1982, Ser. No. 433,269
Claims priority, application France, Oct. 7, 1981, 81 18891
Int. Cl.³ A61K *35/78*
U.S. Cl. 424—195 **3 Claims**

1. A process for the isolation of a fraction of Mandassi (*Cyperus articulatus L.*) active as an anti-convulsant which comprises the steps:
(a) extracting ground Mandassi rhizomes by decoction with water,
(b) hot filtering the aqueous extract,
(c) concentrating the aqueous extract until its weight is substantially equal to the weight of rhizomes initially extracted,
(d) adding twice the weight by volume of 95% alcohol to the concentrated extract, and
(e) separating the solid material which precipitates on addition of the alcohol.

4,483,853

AMINO ACID ISOMERS, THEIR PRODUCTION AND THEIR MEDICINAL USE

James F. Collins, Flat 7, Langwood, 87 Langley Rd., Watford, Hertfordshire, England; Kenneth Curry, University of British Columbia, Department of Physiology, Vancouver, British Columbia, Canada, and Robert Schwarcz, 6719 Boanie Bridge Dr., Apt. 202, Baltimore, Md. 21209

Continuation-in-part of Ser. No. 356,036, Mar. 8, 1982,. This application Oct. 14, 1982, Ser. No. 434,361
Claims priority, application United Kingdom, Aug. 14, 1981, 8124899; Fed. Rep. of Germany, Aug. 11, 1982, 3229893
Int. Cl.³ A61K *31/66, 31/16, 31/19, 31/22*
U.S. Cl. 424—211 **14 Claims**

1. A method of combatting a disease of the central nervous system in a human and non-human animal which comprises administering to the animal the (−)-D-isomer of aminophosphonoheptanoic acid or an ester or a salt thereof, or a pharmaceutically acceptable bioprecursor thereof effective to combat the disease.

4,483,854

SYSTEMIC TREATMENT OF PSORIASIS USING CERTAIN SALICYLATES

Julius Diamond, Mountain Lakes, N.J., assignor to Key Pharmaceuticals, Inc., Miami, Fla.

Filed Apr. 12, 1983, Ser. No. 484,387
Int. Cl.³ A61K *31/60*
U.S. Cl. 424—230 **6 Claims**

1. A method of treating a patient suffering from psoriasis comprising orally administering to said patient an amount of a salicylic acid or a pharmaceutically acceptable salt of a salicylic acid effective to inhibit the endogenous lipoxygenase present in psoriatic plaque fluid without inhibition by cylcooxygenase enzyme, said salicylic acid being selected from the group consisting of salicylic acid, salicylsalicylic acid, and 5-(2',4'-difluorophenyl)salicylic acid.

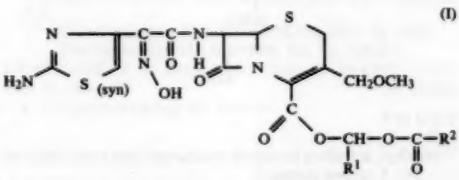
4,483,855

CEPHALOSPORIN DERIVATIVE AND ANTIBIOTIC COMPOSITIONS

Hideo Nakao; Koichi Fujimoto; Sadao Ishihara; Shinichi Sugawara, and Isamu Igarashi, all of Hiromachi, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Filed Sep. 23, 1981, Ser. No. 304,987
Claims priority, application Japan, Sep. 30, 1980, 55/136449
Int. Cl.³ A61K *31/545*; C07D *501/34*
U.S. Cl. 424—246 **4 Claims**

1. The compound of the formula (I):



(I)

wherein:
R^1 represents a hydrogen atom;
and
R^2 represents a —$C(CH_3)_3$ group; and pharmaceutically acceptable acid addition salts thereof.

3. Anti-bacterial pharmaceutical compositions comprising (i) an anti-bacterially effective amount of a compound or salt of claim 1 and (ii) a pharmaceutically acceptable carrier.

4,483,856

INSECTICIDAL N-SUBSTITUTED-2-(NITROMETHYLENE)-TETRAHYDRO-2H-1,3-THIAZINES

Martin Harris, and Derek A. Wood, both of Sittingbourne, England, assignors to Shell Oil Company, Houston, Tex.

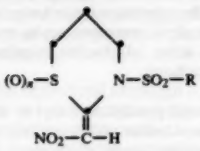
Filed Mar. 24, 1983, Ser. No. 478,600

Claims priority, application United Kingdom, Mar. 26, 1982, 8209028

Int. Cl.³ A01N *43/86;* C07D *279/06*

U.S. Cl. 424—246 **6 Claims**

1. A compound of the formula



wherein n is zero or one and R is alkyl of from one to twenty carbon atoms; alkenyl of from three to six carbon atoms; alkyl of from one to four carbon atoms substituted by up to three fluorine, chlorine, bromine or iodine atoms, by alkoxy, alkoxycarbonyl or alkylcarbonyloxy of up to six carbon atoms, by oxabicycloalkyl of up to ten carbon atoms, by phthalimido, by phenyl or phenoxy optionally substituted by one or more of halogen, alkyl, alkoxycarbonyl of up to six carbon atoms and trihalomethyl, trialkylsilyl in which each alkyl is of one to six carbon atoms, or by quaternary ammonium of the formula:

$$Q^{\ominus}R_3{}^1N^{\oplus}—$$

in which each R^1 is alkyl of one to six carbon atoms, $Q^{\ominus}$ is a halide ion, and n is zero.

5. A method for controlling insects at a locus which comprises applying to said locus an effective amount of a compound of claim 1.

4,483,857

4-AMINO-6,7-DIMETHOXY-2-(4-HETEROARYL-PIPERAZINO)QUINAZOLINE ANTIHYPERTENSIVES

Simon F. Campbell, Deal, and Rhona M. Plews, Canterbury, both of England, assignors to Pfizer Inc., New York, N.Y.

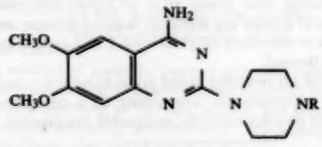
Division of Ser. No. 333,672, Dec. 23, 1981, Pat. No. 4,435,401. This application Aug. 24, 1983, Ser. No. 525,964

Claims priority, application United Kingdom, Dec. 29, 1980, 8041411

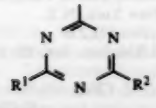
Int. Cl.³ A61K *31/53;* C07D *417/00, 403/00*

U.S. Cl. 424—249 **8 Claims**

1. A compound of the formula



or a pharmaceutically acceptable acid addition salt thereof, wherein R is of the formula



wherein R^1 is hydrogen and R^2 is 6,7-dimethoxy-1,2,3,4-tetrahydroisoquinolin-2-yl, or R^1 and R^2 are each a member selected from the group consisting of hydrogen, hydroxy, F, Cl, Br, I, (alk)R^3, O(alk)R^3, S(alk)R^3, NR^4R^5, $C_6H_4R^6$ and $OC_6H_4R^6$, where (alk) is $(C_1–C_4)$alkylene, R^3 is hydrogen or $C_6H_4R^6$, when taken separately, R^4 is hydrogen or $(C_1–C_4)$alkyl and R^5 is hydrogen, phenyl, (alk)R^3 or $(C_3–C_7)$cycloalkyl, or R^4 and R^5 taken together with the nitrogen atom to which they are attached form a pyrrolo, piperidino, 4-methylpiperazino, morpholino or thiomorpholino group and R^6 is hydrogen, F, Cl, Br, I, $(C_1–C_4)$alkyl or $(C_1–C_4)$alkoxy.

7. A method for treating mammalian hypertension which comprises orally or parenterally administering to a mammal in need of such treatment an antihypertensive effective amount of a compound according to claim 1.

4,483,858

8-[2-IMIDAZOLYLMETHYLOXY(THIO, OR AMINO)]-IMIDAZO[1,2-a]PYRAZINES AND DERIVATIVES FOR TREATING HYPERTENSION

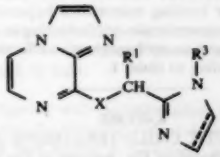
Walfred S. Saari, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 25, 1982, Ser. No. 436,753

Int. Cl.³ C07D *487/04;* A61K *31/495*

U.S. Cl. 424—250 **9 Claims**

1. The compound of structural Formula I:



I

of a pharmaceutically acceptable salt thereof, wherein X is

—S—, >SO, $>SO_2$ or —O—; and R^1, R^2 and R^3 are independently hydrogen or C_{1-3}alkyl, and the dotted line is an optional double bond.

4. An antihypertensive pharmaceutical formulation comprising a pharamaceutical carrier and an effective amount of the compound of claim 1.

4,483,859

4-AMINO-6,7-DIMETHOXY-2-(4-HETEROARYL-PIPERAZINO) QUINAZOLINE ANTIHYPERTENSIVES

Simon F. Campbell, Deal, and Rhona M. Plews, Canterbury, both of England, assignors to Pfizer Inc., New York, N.Y.

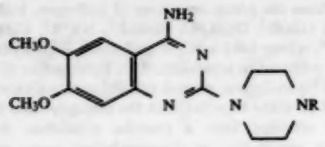
Division of Ser. No. 333,672, Dec. 23, 1981, Pat. No. 4,435,401. This application Aug. 24, 1983, Ser. No. 526,005

Claims priority, application United Kingdom, Dec. 29, 1980, 8041411

Int. Cl.³ A61K *31/495, 31/505;* C07D *401/00*

U.S. Cl. 424—250 **9 Claims**

1. A compound of the formula



or a pharmaceutically acceptable acid addition salt thereof, wherein R is of the formula

wherein R^1 is hydrogen and R^2 is 6,7-dimethoxy-1,2,3,4-tetrahydroisoquinolin-2-yl, or R^1 and R^2 are each a member selected from the group consisting of hydrogen, hydroxy, F, Cl, Br, I, (alk)R^3, O(alk)R^3, S(alk)R^3, NR^4R^5, $C_6H_4R^6$ and $OC_6H_4R^6$, where (alk) is $(C_1–C_4)$alkylene, R^3 is hydrogen or $C_6H_4R^6$, when taken separately, R^4 is hydrogen or $(C_1–C_4)$alkyl and R^5 is hydrogen, phenyl, (alk)R^3 or $(C_3–C_7)$cycloalkyl, or R^4 and R^5 taken together with the nitrogen atom to which they are attached form a pyrrolo, piperidino, 4-methylpiperazino, morpholino or thiomorpholino group and R^6 is hydrogen, F, Cl, Br, I, $(C_1–C_4)$alkyl or $(C_1–C_4)$alkoxy.

8. A method for treating mammalian hypertension which comprises orally or parenterally administering to a mammal in need of such treatment an antihypertensive effective amount of a compound according to claim 1.

4,483,860

HYPERKINETIC CHILD TREATMENT AGENT

Ronald R. Tuttle, Plantation, Fla., assignor to Key Pharmaceuticals, Inc., Miami, Fla.

Filed Sep. 12, 1983, Ser. No. 531,326

Int. Cl.³ A61K *31/485*

U.S. Cl. 424—260 **4 Claims**

1. A method of orally treating a child having a tendency to be overactive to the extent of requiring an external control which comprises orally administering to said child a pharmaceutically effective amount of (−)-17-(cyclopropylmethyl)-4,5-alpha-epoxy-3,14-dihydroxymorpinan-6-one to said child, whereby the attention span of the child is lengthened.

4,483,861

ANTIHYPERTENSIVE SULFUR-CONTAINING COMPOUNDS

Jun-ichi Iwao, Takarazuka; Masayuki Oya, Ibaraki, and Tadashi Iso, Tondabayashi, all of Japan, assignors to Santen Pharmaceutical Co., Ltd., Osaka, Japan

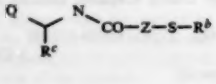
Filed Oct. 22, 1979, Ser. No. 86,996

Claims priority, application Japan, Oct. 31, 1978, 53-135093; Dec. 14, 1978, 53-155166; Feb. 6, 1979, 54-012519; Feb. 19, 1979, 54-018812

Int. Cl.³ A61K *31/425, 31/44*; C07D *277/06, 417/04*

U.S. Cl. 424—263 **17 Claims**

1. A compound of the formula



[I]

wherein

Q is sulfur;

R^a is R^1 or R^9;

R^b is R^6, R^8 or R^{10}; and

R^c is R^5 or R^7;

and

when R^b is R^8, R^c is R^5;

when R^b is R^6, R^c is R^7;

when R^b is R^{10}, R^c is R^5, and R^a is R^9;

R^1 is hydrogen;

R^5 is cyclohexyl, phenyl, furyl, thienyl, pyridyl, naphthyl, substituted cyclohexyl, substituted phenyl, substituted furyl, substituted thienyl, substituted pyridyl or substituted naphthyl wherein the substitutent(s) is lower alkyl, hydroxy, lower alkoxy, acyloxy, mercapto, acylmercapto, halogen, nitro, amino, lower alkylamino, acylamino, lower alkylenedioxy or carboxy;

R^6 is acetyl;

R^7 is cyclohexyl, furyl, thienyl, pyridyl, naphthyl or substituted phenyl wherein the substituent(s) is acyloxy, mercapto, acylmercapto, amino, lower alkylamino, acylamino, lower alkylenedioxy or carboxy;

R^8 is lower alkyl, lower alkanoyl except acetyl, higher alkanoyl, cyclohexanecarbonyl, aralkyl, phenyl-lower alkanoyl, pyridylcarbonyl, benzyloxycarbonyl, naphthoyl, substituted lower alkyl, substituted benzoyl, or substituted phenyl-lower alkanoyl wherein the substituent(s) is lower alkyl, lower alkoxy, hydroxy, phenyl-lower alkoxy, acyloxy, halogen, mercapto, acylmercapto, nitro, amino, lower alkylamino, arylamino, acylamino or carboxy;

R^9 is phenyl, alkoxy-lower alkyl, acyloxy-lower alkyl, imido-lower alkyl or substituted phenyl wherein the substituent(s) is lower alkyl, lower alkoxy, hydroxy, acyl, acyloxy, halogen, nitro, amino, lower alkylamino, acylamino or carboxy;

R^{10} is lower alkyl, lower alkanoyl, higher alkanoyl, cyclohexanecarbonyl, aralkyl, benzoyl, phenyl-lower alkanoyl, pyridylcarbonyl, benzyloxycarbonyl, naphthoyl, substituted lower alkyl, substituted benzoyl or substituted phenyl-lower alkanoyl wherein the substituent(s) is lower alkyl, lower alkoxy, hydroxy, phenyl-lower alkoxy, acyloxy, halogen, mercapto, acylmercapto, nitro, amino, lower alkylamino, acylamino or carboxy; and

wherein in the groups defined herein lower alkyl groups contain 1 to 6 carbon atoms, higher alkyl groups contain 7 to 20 carbon atoms, alkyl groups contain 1 to 20 carbon atoms, aralkyl groups are phenyl-lower alkyl groups, acyloxy groups are lower alkanoxy, benzoyloxy, or benzyloxycarbonyloxy groups, acylamino groups are lower alkanoylamino, benzoylamino, or benzyloxycarbonylamino groups, acylmercapto groups are lower alkanoylmercapto or benzoylmercapto groups, arylamino groups are phenylamino or phenylamino groups substituted with lower alkyl or lower halogenalkyl groups, and acyl groups are acetyl or benzoyl groups; and

Z is straight or branched alkylene with 1 to 3 carbon atoms; and salts thereof.

17. A method for reducing blood pressure which comprises administering a composition comprising (i) a compound of claim 1 and (ii) pharmaceutically acceptable excipient(s).

4,483,862

2-(1H-1,2,4-TRIAZOL-1-YL)-1,1-BIS-(PERFLUOROALKYL)ETHANOL ANTIFUNGAL AGENTS

Kenneth Richardson, and Peter J. Whittle, both of Canterbury, England, assignors to Pfizer Inc., New York, N.Y.

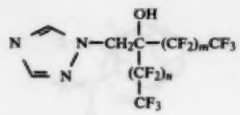
Filed Jan. 16, 1984, Ser. No. 571,219

Claims priority, application United Kingdom, Jan. 29, 1983, 8302498

Int. Cl.³ A01N *43/64*; A61K *31/41*; C07D *249/08*

U.S. Cl. 424—269 **10 Claims**

1. A compound of the formula



(I)

or a pharmaceutically or agriculturally acceptable acid addition salt thereof,
where
m is 0, 1, 2, 3 or 4; and
n is 0, 1, 2, 3 or 4.

7. A pharmaceutical composition comprising an antifungal amount of a compound or pharmaceutically acceptable salt according to claim **1** and a pharmaceutically acceptable diluent.

8. An agricultural antifungal composition suitable for use on a plant or seed which comprises an antifungal amount of a compound or agriculturally acceptable salt according to claim **1** and an agriculturally acceptable diluent.

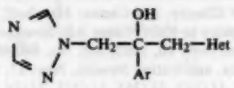
4,483,863

TRIAZOLE ANTIFUNGAL AGENTS

Kenneth Richardson, and Geoffrey Gymer, both of Canterbury, England, assignors to Pfizer Inc., New York, N.Y.

Filed Jan. 20, 1984, Ser. No. 572,332
Int. Cl.[3] **A01N** *43/64;* **A61K** *31/41;* **C07D** *249/08, 403/06*
U.S. Cl. 424—269 **5 Claims**

1. A compound having the formula



and the pharmaceutically acceptable acid addition salts thereof wherein Ar is dichlorophenyl and Het is selected from the group consisting of 1-methyltetrazol-5-yl, 1,2,4-triazol-3-yl, 1-methyl-1,2,4-triazol-3-yl, 2-methyl-1,2,4-triazol-3-yl, 4-methyl-1,2,4-triazol-3-yl, imidazol-2-yl and 1-methylimidazol-2-yl.

5. A method for treating a human having a fungal infection, which comprises administering to said human an antifungal amount of a compound as claimed in claim **1**.

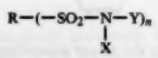
4,483,864

NON-CLASSICAL TOPICAL TREATMENT FOR GLAUCOMA

Charles F. Barfknecht, and Ronald D. Schoenwald, both of Iowa City, Iowa, assignors to University of Iowa Research Foundation, Iowa City, Iowa

Filed Feb. 4, 1983, Ser. No. 464,061
Int. Cl.[3] **A61K** *31/425, 31/18*
U.S. Cl. 424—270 **4 Claims**

1. A method of topically treating glaucoma with eye drops to reduce intraocular eye pressure, said method comprising:
topically applying to the eye, a small but intraocular eye pressure reducing amount of a non-classical carbonic anhydrase inhibitor of the formula:



wherein "R" is selected from the group consisting of substituted benzothiazole, 2-acylamino-1,3,4 thiadiazole-5-, 2-acylamino-2-methyl-1,3,4-thiadiazole-5, and dichloro-phenyl-1,3-di-; and X is selected from the group of hydrogen and hydroxyl, and Y is selected from the group of C_1 to C_6 alkyl and hydrogen, and if either X or Y is hydrogen the other is not hydrogen; and "n" is either 1 or 2,
in combination with an inert, non-irritating, non-toxic eye drop diluent.

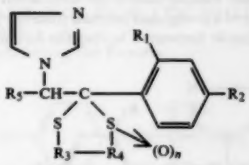
4,483,865

ANTIMICROBIAL IMIDAZOLE DERIVATIVES

Jan Heeres, Vosselaar; Leo J. J. Backx, Arendonk, and Joseph H. Mostmans, Antwerp, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

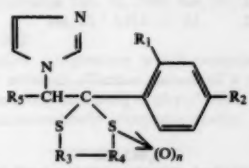
Continuation-in-part of Ser. No. 248,594, Mar. 27, 1981, abandoned. This application Jan. 25, 1982, Ser. No. 342,553
Int. Cl.[3] **A01N** *43/50;* **C07D** *403/00, 233/54*
U.S. Cl. 424—273 R **23 Claims**

1. A compound selected from the group consisting of an imidazole derivative having the formula



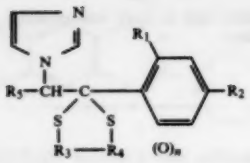
the possible stereochemically isomeric forms, the acid addition salts and the metal salt complexes thereof, wherein:
R_1 is hydrogen or halo;
R_2 is halo;
R_3 and R_4 together with the sulfur atoms to which they are attached and the bridging carbon atom form a 5- or 6-membered ring which is optionally substituted with a C_1–C_3-lower alkyl group;
R_5 is hydrogen or C_1–C_4-lower alkyl;
and n is 0, 1 or 2.

10. An antimicrobial composition comprising inert carrier materials and as an active ingredient an antimicrobially effective amount of a compound selected from the group consisting of an imidazole derivative having the formula



the possible stereochemically isomeric forms, the acid addition salts and the metal salt complexes thereof, wherein:
R_1 is hydrogen or halo;
R_2 is halo;
R_3 and R_4 together with the sulfur atoms to which they are attached and the bridging carbon atom form a 5- or 6-membered ring which is optionally substituted with a C_1–C_3-lower alkyl group;
R_5 is hydrogen or C_1–C_4-lower alkyl;
and n is 0, 1 or 2.

19. A method of protecting crops from microbial attack which comprises treating said crops with an effective antimicrobial amount of a compound selected from the group consisting of an imidazole derivative having the formula



the possible stereochemically isomeric forms, the acid addition salts and the metal salt complexes thereof, wherein:

R_1 is hydrogen or halo;

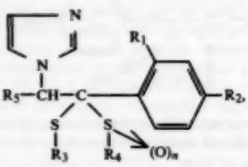
R_2 is halo;

R_3 and R_4 together with the sulfur atoms to which they are attached and the bridging carbon atom form a 5- or 6-membered ring which is optionally substituted with a C_1–C_3-lower alkyl group;

R_5 is hydrogen or C_1–C_4-lower alkyl;

and n is 0, 1 or 2.

23. A method of protecting crops from microbial attack which comprises treating said crops with an effective antimicrobial amount of a compound selected from the group consisting of an imidazole derivative having the formula



(I)

the possible stereochemically isomeric forms, the acid addition salts and the metal salt complexes thereof, wherein:

R_1 and R_2 are each independently selected from the group consisting of hydrogen, halo and methyl;

R_3 and R_4 are each independently selected from the group consisting of C_1–C_6-lower alkyl and C_3–C_4-lower alkenyl, or R_3 and R_4 form, together with the sulfur atoms to which they are attached and the bridging carbon atom, a 5-, 6- or 7-membered ring which is optionally substituted with 1 to 4 C_1–C_4-lower alkyl groups;

R_5 is a member selected from the group consisting of hydrogen; and

n is 0, 1 or 2.

4,483,866

AGRICULTURAL COMPOSITION AND METHOD UTILIZING 1-BENZYLIMIDAZOLE DERIVATIVES

Masaru Ogata, Hyogo; Katsuya Tawara, Osaka; Yoshihachi Watanabe, Shiga; Hiroshi Matsumoto, Osaka, and Toshio Takahashi, Hyogo, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

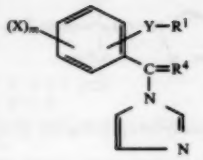
Division of Ser. No. 341,634, Jan. 22, 1982, , which is a division of Ser. No. 157,166, Jun. 6, 1980, Pat. No. 4,328,348. This application Jul. 13, 1982, Ser. No. 397,786

Claims priority, application Japan, Jun. 7, 1979, 54-71953; Sep. 7, 1979, 54-115465

Int. Cl.[3] **A01N** *43/50*

U.S. Cl. 424—273 R **13 Claims**

1. A fungicidal composition for agricultural use containing an effective fungicidal amount of the compound of the formula:



wherein X is halogen, nitro, C_1 to C_5 alkyl, C_1 to C_5 alkoxy or halobenzyloxy; m is an integer of 0 to 3; Y is oxa, thia or imino optionally substituted by C_1 to C_5 alkanoyl, C_1 to C_5 haloalkanoyl or C_1 to C_5 alkyl; R^1 to C_5 alkyl, C_3 to C_{10} dialkylaminoalkyl, C_{15} to C_{20} dibenzylamino-alkyl, 1-pyrrolidinyl, 2-imidazolin-2-yl or a group of the formula $-(CH_2)_n-Z-Q$ wherein n is an integer of 0 to 4, Z is oxa, thia or a single bond and Q is phenyl or thienyl optionally substituted by 1 to 3 members selected from the group consisting of halogen, nitro and C_1 to C_5 alkoxy; and R^4 is C_1 to C_5 alkylidene optionally substituted by phenyl, the benzene ring in the above formula being optionally condensed with another benzene ring, or an fungicidally acceptable acid addition salt thereof and an agriculturally acceptable inert carrier.

4,483,867

ANTIFIBRINOLYTICALLY ACTIVE DERIVATIVES OF TRANEXAMIC ACID

Carl M. E. Svahn, Sollentuna; Ferenc Merényi, Täby; Lennart E. Karlsson, Vällingby, and Gunnar Hanshoff, Järfälla, all of Sweden, assignors to KabiVitrum AB, Stockholm, Sweden

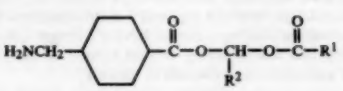
Filed Nov. 10, 1982, Ser. No. 440,699

Claims priority, application Sweden, Nov. 17, 1981, 8106818

Int. Cl.[3] **A61K** *31/365, 31/265, 31/215, 31/24, 31/22;* **C07C** *101/04;* **C07D** *307/77*

U.S. Cl. 424—279 **27 Claims**

1. A compound of the formula



I

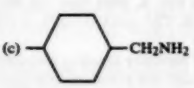
and therapeutically acceptable salt thereof,

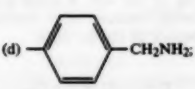
wherein

R^1 is selected from the group consisting of

(a) alkyl groups containing 1–4 carbon atoms,

(b) alkoxy groups containing 1–4 carbon atoms,





R^2 is selected from the group consisting of

(a) H,

(b) alkyl groups containing 1–4 carbon atoms,

(c) $-COOR^3$, wherein R^3 is an alkyl group containing 1–4 carbon atoms,

(d) $-CONR^4R^5$, wherein R^4 and R^5 are the same or different alkyl groups containing 1–3 carbon atoms;

or wherein R^1 and R^2 represent together the radical

14. A method for the treatment in mammals and man of ailments due to increased fibrinolysis, characterized by administration to a host in need thereof of a therapeutically effective amount of a compound according to claim 1.

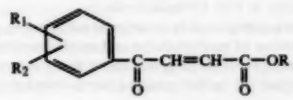
4,483,868

GASTRO-PROTECTING ACTIVITY

Yani Christidis; Robert Fournex, both of Paris, and Colette Tournemine, Livry-Gargan, all of France, assignors to Roussel Uclaf, Romainville, France

Filed Apr. 23, 1981, Ser. No. 256,932
Claims priority, application France, Apr. 24, 1980, 80 09216
Int. Cl.³ A61K *31/36, 31/235, 31/24, 31/19*
U.S. Cl. 424—282 **20 Claims**

1. A method of treating a patient suffering from a disease or ailment accompanied by gastric and gastroduodenal lesions comprising administering to said patient a gastric acid secretion inhibiting and cytoprotecting effective amount of a compound selected from the group consisting of a substituted derivative of 4-phenyl-4-oxo-2-butenoic acid of the formula (I)



(I)

in which R represents hydrogen or alkyl containing 1 to 5 carbon atoms and R_1 and R_2, identical or different, both represent alkoxy containing 1 to 3 carbon atoms, or both represent halogen, or R_1 represents hydrogen and R_2 represents halogen, nitro or trifluoromethyl, or R_1 and R_2, located on adjacent carbon atoms, form a methylenedioxy group, and pharmaceutically acceptable salts.

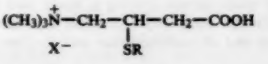
4,483,869

THIOCARNITINES, PROCESS FOR THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

Maria O. Tinti; Emma Quaresima, and Paolo de Witt, all of Rome, Italy, assignors to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A., Rome, Italy

Filed Dec. 15, 1981, Ser. No. 330,998
Claims priority, application Italy, Dec. 24, 1980, 50469 A/80
Int. Cl.³ A01N *37/14, 37/30;* **C07C** *153/017, 149/24*
U.S. Cl. 424—301 **10 Claims**

1. Thiocarnitine of the formula



(I)

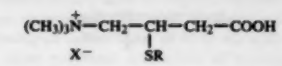
wherein:

X^- is a pharmacologically acceptable halogenide ion, and

R is either hydrogen or the alkanoyl radical of a saturated organic acid having from 2 to 10 carbon atoms.

10. An orally or parenterally administerable pharmaceutical composition for protection against X-ray exposure, cutaneous regeneration from burns, facilitation of alcohol metabolism and use as alcohol detoxicants of the liver which comprises:

(a) a therapeutically effective amount of a thiocarnitine of the formula (I)



wherein:

X^- is a pharmacologically acceptable halogenide ion, preferably the chloride ion, and

R is either hydrogen or the alkanoyl of a saturated organic acid having from 2 to 10 carbon atoms, and

(b) a pharmaceutically acceptable exipient.

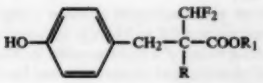
4,483,870

α-DIFLUOROMETHYL AMINO ACIDS AND HYPERTENSION TREATING COMPOSITIONS THEREOF

Janos Kollonitsch, Westfield; Stephen Marburg, Metuchen, and Arthur A. Patchett, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 927,210, Jul. 24, 1978, abandoned. This application Aug. 29, 1980, Ser. No. 70,564
Int. Cl.³ A61K *31/24, 31/195;* **C07C** *101/32, 101/72*
U.S. Cl. 424—309 **6 Claims**

1. Compounds having the formula



and pharmaceutically acceptable salts thereof wherein

R is $—NH_2$ and

R_1 is H or C_1–C_{18}alkyl.

5. A pharmaceutical composition for treating hypertension containing an effective amount of a compound of claim 1.

4,483,871

ANTIULCER COMPOUNDS

Yoshiyuki Tahara, Oi; Michiko Nagai, Wako; Katsura Kogure, Kawagoe; Shigeo Kawase, Tsurugashima, and Teruhito Yamaguchi, Tokyo, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., Japan

Division of Ser. No. 889,568, Mar. 23, 1978, Pat. No. 4,221,810. This application Feb. 13, 1980, Ser. No. 121,284
Int. Cl.³ A61K *31/23*
U.S. Cl. 424—312 **1 Claim**

1. An antiulcer composition which comprises, as active ingredient, an antiulcer effective amount of a compound selected from the group consisting of phytyl oleate and isophytyl oleate in a pharmaceutically acceptable carrier.

4,483,872

NON-CLASSICAL TOPICAL TREATMENT FOR GLAUCOMA USING N-SUBSTITUTED SULFONAMIDES

Charles F. Barfknecht, and Ronald D. Schoenwald, both of Iowa City, Iowa, assignors to University of Iowa Research Foundation, Iowa City, Iowa

Continuation-in-part of Ser. No. 464,061, Feb. 4, 1983,. This application Jul. 11, 1983, Ser. No. 512,234
Int. Cl.³ A61K *31/18*
U.S. Cl. 424—321 **5 Claims**

1. A method of topically treating glaucoma with eye drops to reduce intraocular eye pressure, said method comprising:

topically applying to the eye, a small but theropeutically effective amount of a non-classical carbonic anhydase inhibitor of the formula:

$$R-(-SO_2-\underset{\displaystyle X}{\underset{|}{N}}-Y)_n$$

in combination with an inert, non-irritating non-toxic eye drop dilient, wherein R is selected from the group consisting of phenyl and 4-substituted phenyl wherein the substituent is selected from the group consisting of chloro, nitro, fluoro, hydroxy, hydroxyethoxy, methoxy and ethoxy; and X is selected from the group of hydrogen and hydroxyl; and Y is selected from the group of C_1 to C_6 alkyl and hydrogen, and if either X or Y is hydrogen the other is not hydrogen; and n is either 1 or 2.

4,483,873

AQUEOUS SOLUTION CONTAINING UBIDECARENONE

Hiroyuki Ohashi; Toru Takami, both of Kanagawa; Noritoshi Koyama, Saitama; Yoshio Kogure, Saitama, Japan, and Katsumi Ida, Saitama, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Dec. 23, 1982, Ser. No. 452,844
Claims priority, application Japan, Dec. 28, 1981, 56-209972
Int. Cl.³ A61K *31/12, 31/685, 37/48*
U.S. Cl. 424—331 **4 Claims**

1. An aqueous pharmaceutical solution comprising 0.1 to 10% ubidecarenone and 0.2 to 15 parts by weight per part by weight of ubidecarenone of a hydrogenated lecithin containing at least 85% of phospholipid components and having an iodine value of 10 to 60.

4,483,874

PREPARATION OF MILK SUBSTITUTE

Hans A. S. Olsen, Vanlose, Denmark, assignor to Novo Industri A/S, Denmark

Filed May 3, 1983, Ser. No. 491,184
Claims priority, application Denmark, May 6, 1982, 2025/82
Int. Cl.³ A23L *1/36;* **A23B** *7/10*
U.S. Cl. 426—44 **3 Claims**

1. A method for converting crude forms of vegetable protein into a water-soluble proteinaceous and carbohydrate material characterized by water solubility and dispersibility at pH 4–5 and by a preponderance of mono- and di-saccharides for the carbohydrate content which comprises treating the crude vegetable protein suspended in aqueous medium with an SPS-ase preparation said SPS-ase being characterized as capable of degrading the water-soluble polysaccharide which binds to soy protein.

4,483,875

ENZYMATIC TREATMENT OF POMACE

Kurt A. Dörreich, Basel, Switzerland, assignor to Novo Industri A/S, Denmark

Filed May 3, 1983, Ser. No. 491,182
Int. Cl.³ A23B *7/10*
U.S. Cl. 426—52 **5 Claims**

1. A method for treating pomace in the form of a first pressing pomace suspended in an aqueous medium or in the form of comminuted whole fruit or vegetable suspended in the juice thereof which comprises treating the suspension with an SPS-ase preparation in activity of from 100–2000 MOU units per kilogram of suspension, said SPS-ase being characterized as capable of degrading the water-soluble polysaccharide which binds to soy protein, and thereafter separating the juice product from the residual solids.

4,483,876

ENZYMATIC METHOD FOR PRODUCTION OF INSTANT TEA

Bent R. Petersen, Copenhagen, Denmark, assignor to Novo Industri A/S, Denmark

Filed May 3, 1983, Ser. No. 491,183
Int. Cl.³ A23B *7/10*
U.S. Cl. 426—52 **5 Claims**

1. In a process for the enzymatic production of instant tea, the improvement which comprises treating the tea leaves with an SPS-ase preparation in concentration effective to improve the tea extract yield said SPS-ase being characterized as capable of degrading the water-soluble polysaccharide which binds to soy protein.

4,483,877

METHOD OF PRODUCING SILAGE

William P. Moore, Hopewell, Va., assignor to Hawkeye Chemical Company, Clinton, Iowa

Filed Jan. 25, 1983, Ser. No. 460,824
Int. Cl.³ A23K *1/00, 1/22, 3/03*
U.S. Cl. 426—54 **19 Claims**

1. A method of producing silage comprising: chopping fodder into small pieces; commingling the chopped fodder with about 0.5 to 4.0 weight percent of a preservative which permits fermentation and inhibits mold growth in the fodder, the preservative comprising,

(a) methylolurea admixed with methylenediurea in a weight ratio between 1 to 20 to 1,

(b) free urea in an amount sufficient to prevent reversion of methylolurea to free formaldehyde,

(c) an ammonia compound in an amount sufficient to prevent polymerization of methylolurea and methylenediurea,

(d) an alkaline, pH modifying, substance in an amount sufficient to adjust pH in the preservative to a value between 6 and 10,

(e) and water in an amount sufficient to dissolve the methylolurea, methylenediurea, free urea, ammonia compound, and pH modifying substance;

enclosing the commingled fodder and preservative in a container which limits air intrusion; and storing the enclosed fodder for a period of time and under sufficient conditions for the sugars contained in the fodder to ferment, thereby forming desirable carboxylic acids.

4,483,878

METHOD OF PACKING FRESH SPINACH

John Van Kesteren, Jr., P.O. Box 487, Onancock, Va. 23417

Division of Ser. No. 290,541, Aug. 6, 1981, Pat. No. 4,408,440.
This application Nov. 22, 1982, Ser. No. 443,264
Int. Cl.³ B65B *25/04, 63/02;* **B65D** *85/08*
U.S. Cl. 426—393 **7 Claims**

1. A semi-automated method of packing compressible, leafy vegetables into containers, said method comprising the sequential steps of:

(a) placing an empty, open-topped container on support means in a predetermined position directly below hollow, openended guide means having a lower end portion of substantially the same cross-sectional dimensions as the upper, open end of said container and in close proximity thereto;

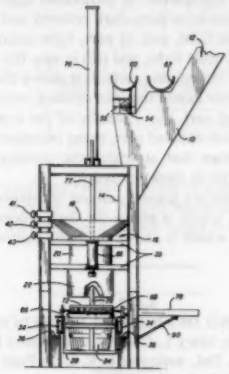
(b) gravity feeding a predetermined quantity of leafy vegetables in an uncompacted state through the upper end of said guide means to fill said container and at least part of said guide means with said vegetables;

(c) lowering a plunger through said guide means to a position substantially flush with said upper end of said container to compress said predetermined quantity of leafy vegetables into the volume of said container;

(d) raising said lower end portion of said guide means to a position above and spaced from said upper end of said

container sufficient to allow the introduction of a retainer means;

(e) advancing said retainer means from a first position laterally adjacent said upper end of said container to a second position extending across said open, upper end of said container, between said vegetables and said plunger and in contacting and partial covering relation to said vegetables;



(f) raising said plunger from said vegetable compressing position with said retainer means remaining in its second position to prevent substantial expansion of said compressed vegetables;

(g) placing and securing a cover on the filled container over said retainer means; and

(h) retracting said retainer means from between said vegetables and said cover back to its first position.

4,483,879

METHOD OF PREPARING DRIED NOODLES

Ko Sugisawa; Fumio Matsui, both of Nara; Yozo Yamamoto, Kyoto; Ryusuke Nakanaga, Takatsuki; Nobuji Takeda, Nara; Yoshimasa Fujii, Yamatokooriyama, and Yoshitaka Hirano, Takatsuki, all of Japan, assignors to House Food Industrial Company Limited, Osaka, Japan

Filed Nov. 4, 1982, Ser. No. 439,217

Claims priority, application Japan, Nov. 9, 1981, 56-178419; May 29, 1982, 57-91840

Int. Cl.³ A23L *1/16*

U.S. Cl. 426—451 **12 Claims**

1. A method of preparing dried noodles having a moisture content of less than 15% which comprises the steps of:

forming a dough comprising wheat flour, seasonings and water into raw noodles, said raw noodles having a moisture content of 35–45%; and

(b) dehydrating said raw noodles by blowing super-heated steam onto said raw noodles at a water evaporation rate of 0.25–1.00 g/second per 100 g of said raw noodles to produce dry noodles having a moisture content of less than 15 percent.

4,483,880

EMULSIFIER COMPOSITION AND QUALITY IMPROVEMENT METHOD OF STARCH CONTAINING FOODS

Yoshihito Koizumi; Kenichi Yamada; Hiroshi Sakka; Mitsuharu Yuuda, all of Hirakata, and Takeshi Yamaguchi, Chiba, all of Japan, assignors to Riken Vitamin Co. Ltd., Tokyo, Japan

Filed Dec. 21, 1982, Ser. No. 451,772

Claims priority, application Japan, Mar. 16, 1982, 57-41581

Int. Cl.³ A21D *2/16*; A23L *1/10*

U.S. Cl. 426—549 **3 Claims**

1. A powdered emulsifier composition which is prepared by meltmixing a monoglyceride composition consisting of 65 to 90 wt% of a saturated fatty acid monoglyceride and 35 to 10 wt% of a cis-type unsaturated fatty acid monoglyceride, said composition having an iodine value of 10 to 40, with 1 to 10 wt% of one or more polybasic acid esters of monoglycerides selected from diacetyltartaric acid esters of monoglyceride, mixed tartaric and acetic acid esters of monoglyceride, tartaric acid esters of monoglyceride and citric acid esters of monoglyceride, and powdering the resultant mixture.

4,483,881

PROCESS FOR DISCONTINUOUS WORT BOILING DURING BEER MANUFACTURE

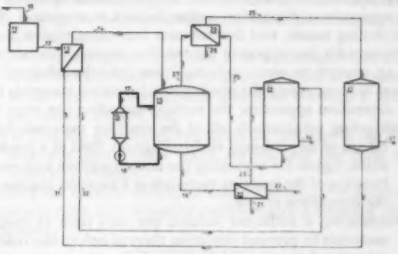
Bernhard Lenz, Schwarzacher Str. 51a, D-8710 Kitzingen, Fed. Rep. of Germany

Filed Dec. 2, 1982, Ser. No. 446,275

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1981, 3147620

Int. Cl.³ C12C *3/00*; A23L *1/207*

U.S. Cl. 426—600 **3 Claims**



1. In a process for discontinuous wort boiling for beer manufacture, in which refined wort is boiled under slight pressure, and after the boiling is cooled in a first heat exchange process to be reused for beer making, wherein, in the first heat exchange process, cool water is heated to a predetermined temperature, and wherein furthermore the energy of the vapor produced by the wort boiling is used in a second heat exchange process, the improvement comprising the steps of reheating the heated water in the second heat exchange process by the energy arising from the vapor produced by the boiling, heating the refined wort before boiling by the reheated water in a third heat exchange process, and further heating in the second heat exchange process the water cooled in the third heat exchange process by the energy arising from the vapor produced by the boiling.

4,483,882

PRESERVATION OF RELATIONSHIP OF PARTICLES AND SUPPORTING LIQUID OF A MONOLAYER DURING DRYING

Alex M. Saunders, San Carlos, Calif., assignor to SmithKline Beckman Corporation, Philadelphia, Pa.

Filed Aug. 1, 1983, Ser. No. 518,953

Int. Cl.³ A01N *1/02*; B44D *1/02*; G01N *1/28*

U.S. Cl. 427—2 **10 Claims**

1. A process of preparing blood films for microscopical examination wherein the cell shape, smoothness and homogeneity of the plasma layer are stabilized, which comprises a combination of steps including (a) timely fixation; (b) producing a cross-linked matrix in the plasma; (c) immersing the blood film, while still wet, in a non-polar solvent to control surface tension and evaporation rate; and (d) performing chemical reactions by diffusing chemical reagents across an interface between the non-polar solvent and the blood.

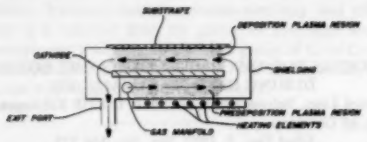
4,483,883
UPSTREAM CATHODE ASSEMBLY

Prem Nath, Rochester, and Masatsugu Izu, Birmingham, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 452,224, Dec. 22, 1982,. This application Nov. 7, 1983, Ser. No. 549,054

Int. Cl.³ B05D *3/06*

U.S. Cl. 427—39 **12 Claims**



1. A method for the high speed deposition of amorphous semiconductor material in deposition apparatus which includes: substrate material; means for introducing reaction materials, including at least one semiconductor material, into the apparatus; a deposition region located downstream of the introducing means, said downstream deposition region including means for decomposing the reaction materials and depositing an amorphous semiconductor layer onto the substrate; and means for evacuating the nondeposited reaction materials from the deposition apparatus; the method including the steps of:

subjecting substantially all of the reaction materials to the effects of an upstream electromagnetic field in a predeposition region for beginning the decomposition and recombination of the reaction materials at a location upstream of the deposition region;

introducing a sufficient volume per unit time of reaction meterials to prevent depletion thereof before the reaction materials flow completely through the downstream deposition region; and

preventing nonuniform stagnation and compression of the reaction materials flowing through the predeposition and deposition regions, whereby the deposition apparatus provides for the high speed deposition of a stable, uniform layer of powder-free semiconductor material.

4,483,884
PROCESS FOR PRODUCING TEXTURED COATINGS

Harden H. Troue, Plainfield, Ind., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 348,345, Feb. 12, 1982, Pat. No. 4,421,784. This application Aug. 31, 1983, Ser. No. 527,986

The portion of the term of this patent subsequent to Dec. 20, 2000, has been disclaimed.

Int. Cl.³ B05D *3/02, 3/06*

U.S. Cl. 427—54.1 **6 Claims**

1. In a process for providing a textured coating on a substrate, which coating has a thickness of about 0.1 mil to about 10 mils, comprising the following steps:

(a) applying a coating, which is curable with ultraviolet light, to the substrate, said coating having a viscosity, as applied, of at least about 50 centipoises;

(b) increasing the viscosity of the coating by exposing the coating to ultraviolet light, said viscosity being increased to a viscosity no higher than that at which the coating is capable of being textured in steps (c) and (d);

(c) exposing the coated substrate to ultraviolet light having wavelengths in the range of about 1800 Angstroms to about 2750 Angstroms in an inert atmosphere for a period of time sufficient to initiate texturing at the surface of the coating;

(d) maintaining the coated substrate from step (c) in a space essentially devoid of ultraviolet light for a period of time sufficient for the surface of the coating to texture; and

(e) exposing the coated substrate from step (d) to ultraviolet light having wavelengths in the range of about 1800 Angstroms to about 4000 Angstroms in an inert atmosphere or air until the coating is essentially cured,

the improvement comprising, (i) providing a coating, which is essentially devoid of pigment; (ii) providing for the substrate, (A) a substrate, the surface of which is, in part, dark colored and non-reflective to ultraviolet light, and, in part, light colored and reflective to ultraviolet light, or (B) a substrate transparent to ultraviolet light with a background which is, in part, dark colored and non-reflective to ultraviolet light, and, in part, light colored and reflective to ultraviolet light; and (iii) in step (b), increasing the viscosity of the coating, which is above the dark colored part, to a lesser extent than the coating, which is above the light colored part, the viscosity of the coating, which is above the dark colored part, being increased to a viscosity no higher than that at which the coating is capable of being textured in steps (c) and (d),

whereby a relatively greater amount of texture is obtained in the coating, which is above the dark colored part than in the coating which is above the light colored part.

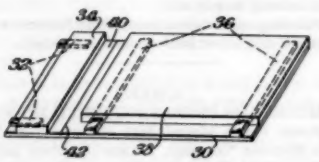
4,483,885
METHOD AND DEVICE FOR ELECTROPHORESIS

Edward M. Chait; Mary L. Gianelli, and Donald R. Johnson, all of Wilmington, Del., assignors to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Division of Ser. No. 430,836, Sep. 30, 1982, Pat. No. 4,443,319. This application Nov. 4, 1983, Ser. No. 548,637

Int. Cl.³ G01N *27/26*

U.S. Cl. 427—58 **2 Claims**



1. A method of constructing an electrophoresis device comprising the steps of:

forming a sheetlike substrate of a chemically inert material,

depositing a thin film of electrically conductive material on two spaced facial regions of the substrates, and

overcoating the film and substrate with a gel of electrophoretic polymer material.

4,483,886
METHOD FOR MAKING FREE-FLOWING, MELT-COATED RUBBER PELLETS

Ronald C. Kowalski, New Providence, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 27, 1982, Ser. No. 382,378

Int. Cl.³ B05D *7/00*

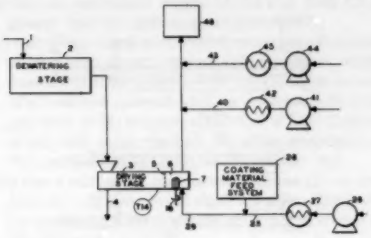
U.S. Cl. 427—213 **24 Claims**

1. A continuous method for making at least one melt-coated pellet of material comprising:

mixing coating material with at least one stream of carrier gas to form at least one coating stream, the carrier gas having a temperature below the melting point of the coating material;

contacting at least one pellet of macromolecular material having a glass transition temperature and melting point temperature in the elastomeric range with the coating stream, said pellet having a temperature at or above its melting point and above the melting point of the coating

material, so as to form at least one layer of substantially melted coating on the pellet; and



cooling the resulting melted coating to a temperature below the melting point of the coating material;

whereby at least one melt-coated pellet is made.

4,483,887

METAL PLATING IRON-CONTAINING SUBSTRATES

Silverio M. Garcia, Norman, Okla., assignor to Capetrol International, Inc., Norman, Okla.

Filed Feb. 21, 1984, Ser. No. 581,873

Int. Cl.³ B05D *1/18*; B22F *7/00*; C25D *3/46*

U.S. Cl. 427—436 **22 Claims**

1. An improved plating solution for depositing metal ions on an iron-containing substrate, the plating solution comprising:

(a) from about 1 to about 35 weight percent of an aqueous solution containing the metal ions to be deposited on the substrate; and

(b) from about 65 to about 99 weight percent of an aqueous acidic component having a pH value of less than about 1, the aqueous acidic component prepared by the steps of:

(1) admixing from about 45 to about 80 weight percent hydrochloric acid with from about 20 to about 55 weight percent phosphoric acid to produce an acidic mixture;

(2) admixing the acidic mixture with an effective amount of water to produce an aqueous acidic mixture; and

(3) admixing from about 2 to about 20 weight percent of a hydroxy carboxylic acid and from about 0 to about 20 weight percent of a dicarboxylic acid into the aqueous acidic mixture.

4,483,888

CARBON DIOXIDE TREATMENT OF EPOXY RESIN COMPOSITIONS

Yulin Wu, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 298,418, Sep. 1, 1981, abandoned. This application May 16, 1983, Ser. No. 495,294

Int. Cl.³ C08J *3/00*; C08L *63/00*; B05D *3/00, 3/04*

U.S. Cl. 427—336 **17 Claims**

1. A method for treating a metal surface to inhibit corrosion thereof, the method comprising applying to the surface a composition prepared by contacting constituents comprising an epoxy resin, a curing agent for the epoxy resin, a hydrocarbon diluent and carbon dioxide.

4,483,889

METHOD FOR THE PRODUCTION OF FIBRE COMPOSITE MATERIALS IMPREGNATED WITH RESIN

Bengt Andersson, Söråker, Sweden, assignor to KemaNord AB, Stockholm, Sweden

Filed Aug. 2, 1983, Ser. No. 519,237

Claims priority, application Sweden, Aug. 5, 1982, 8204595

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—389.9 **7 Claims**

1. A method for the manufacture of a composite material in the form of a web and comprising fibres, a formaldehyde-based resin and expanded thermoplastic microspheres comprising the steps of

(a) forming a liquid suspension of fibres and unexpanded thermoplastic microspheres containing a blowing agent,

(b) depositing a web containing fibres and the unexpanded microspheres from said liquid suspension, the amount of fibres deposited being between 20 and 500 g/m^2 and the thickness of the web being between 0.01 and 1.5 mm,

(c) heating the deposited web to a temperature sufficient to expand the thermoplastic microspheres but insufficient for melting the thermoplastic material of the microspheres,

(d) drying the web containing the expanded thermoplastic microspheres,

(e) impregnating the dried web with a precondensate of the formaldehyde-based resin to give a ratio of microspheres to the sum of microspheres and resin between 2 and 80 percent by weight, and

(f) drying the web containing the precondensate of the formaldehyde based resin while maintaining the resin in a nonsticky B-stage,

whereby the volume content of microspheres in the dried web containing resin and expanded microspheres is between 70 and 90 percent.

4,483,890

DECORATING WITH SHRINK FILM

Floyd Beery, Prairie Village, Kans.; Ronald R. Renoe, Kansas City, Mo., and Larry Williams, Shawnee, Kans., assignors to Hallmark Cards, Inc., Kansas City, Mo.

Filed Jan. 24, 1983, Ser. No. 460,143

Int. Cl.³ A47G *33/08*

U.S. Cl. 428—7 **6 Claims**

1. A decorated article carrying on a surface thereof a film of a decorative heat-shrinkable plastic with a layer of particulate solid material interspersed between said article and said film, said particulate solid material being present in finely divided form sufficient to reduce blotching on the surface of the decorated article while permitting the film of heat-shrinkable plastic to tightly and smoothly conform to the surface of the decorated article.

4,483,891

MULTILAYERED TUBE HAVING A BARRIER LAYER

Daryl D. Cerny, Greenville, Ohio, assignor to Ball Corporation, Muncie, Ind.

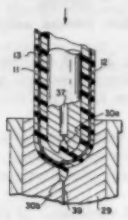
Division of Ser. No. 329,625, Dec. 11, 1981, Pat. No. 4,424,182. This application Oct. 6, 1983, Ser. No. 539,495

Int. Cl.³ B65D *23/00*

U.S. Cl. 428—35 **4 Claims**

1. A multilayered parison structure comprising a cylindrical body having a body wall, an open portion terminating at one end thereof and a bottom wall at the opposite end of said body, said body and bottom walls being composed of a plurlity of layers bonded together, all the layers of said bottom wall extending fully inwardly in contacting relationship with like layers about the longitudinal axis of said cylindrical body, one of said plurality of layers being a low-gas permeable layer, said low-gas permeable layer being in an overlapping relationship, and at least one balancing member attached to said bottom wall, said member being composed of a single layer material

forced therefrom while in a plastic state, said member being forced by venting upon impact to exit a predetermined volume



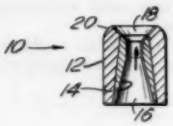
of said material about the longitudinal axis to define an annular protrusion.

4,483,892

WEAR RESISTANT ANNULAR INSERT AND PROCESS FOR MAKING SAME

John M. Ohno, Plymouth, Mich., assignor to General Electric Company, Detroit, Mich.

Filed Dec. 16, 1981, Ser. No. 331,369
Int. Cl.³ C04B 35/65
U.S. Cl. 428—36 **7 Claims**



1. A process for producing a wear-resistant annular insert, comprising:

preparing a first mixture of super-hard crystals selected from at least one member of the group consisting of diamond and cubic boron nitride crystals, and carbon black in a temporary binder;

preparing a second mixture of carbon fiber, carbon black and filler in a temporary binder;

depositing said second mixture in a mold and compressing said second mixture in said mold to form an annular exterior layer;

depositing said first mixture within said annular exterior layer and compressing said first mixture therein to form an annular interior layer adjacent to said annular exterior layer;

heating said annular interior and exterior layers to allow for the removal of said temporary binder and the infiltration of liquefied silicon into said annular interior and exterior layers; and

sintering said annular interior and exterior layers to produce said wear-resistant annular insert.

4,483,893

FUSED FLOCK SYSTEM

Stanley E. Harrold, Port Clinton, Ohio, assignor to The Standard Products Company, Cleveland, Ohio

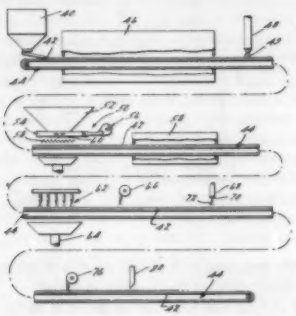
Filed Sep. 30, 1982, Ser. No. 430,784
Int. Cl.³ B05D 1/14
U.S. Cl. 428—90 **18 Claims**

1. A method of forming flocked articles, comprising sequentially:

forming a substrate material;

applying an adhesive to at least portions of a surface of said substrate material; securing a plurality of filaments of flock material to said surface of said substrate material;

fusing at least a portion of adjacent filaments of flock material to each other by heating said portion of adjacent filaments to a temperature sufficient to at least partially melt said portion of adjacent filaments; and then



allowing said portion of adjacent filaments to cool.

4,483,894

PROCESS FOR APPLYING POLYURETHANE FOAMS TO SUBSTRATES AND PRODUCT MADE THEREBY

James R. Porter, and Randall C. Jenkines, both of Freeport, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 276,854, Jun. 24, 1981, abandoned, which is a continuation-in-part of Ser. No. 191,633, Sep. 29, 1980, abandoned. This application Mar. 30, 1983, Ser. No. 480,625
Int. Cl.³ B32B 3/26; B05D 5/00
U.S. Cl. 428—95 **24 Claims**

1. A process for preparing substrates having a fine celled polyurethane foam backing containing an inorganic filler or mixture of such filiers, which process comprises applying to the back of said substrate and subsequently curing thereon a frothed polyurethane forming composition containing

(A) a relatively high molecular weight polyether polyol having an average of from 2 to about 8, hydroxyl groups per molecule and an average hydroxyl equivalent weight of from about 100 to about 3000 or a mixture of such polyols;

(B) a relatively low molecular weight polyol having an average of from about 2 to about 8 hydroxyl groups per molecule and an average equivalent weight of from about 31 to about 230 or a mixture of such polyols;

(C) an organic polyisocyanate or polyisothiocyanate having an average of from about 2 to about 4 NCX (each X being independently O or S) groups per molecule or a mixture of such isocyanates or isothiocyanates;

(D) at least one inorganic filler;

(E) at least one catalyst for effecting the reaction between components (A), (B) and (C); and

(F) at least one silicone surfactant which is a poly(dimethyl)-siloxane polyoxyalkylene copolymer having an average molecular weight of less than about 30,000 and wherein at least about 60 percent by weight of the polyoxyalkylene groups are oxyethylene groups and the dimethylsiloxane content of the polymer is from about 15 percent to about 40 percent by weight and at least about 40 percent by weight of the polymer is derived from the oxyethylene groups;

wherein:

(1) components (A) and (B) are employed in a ratio which provides from about 50 to about 95 parts by weight of component (A) and from about 50 to about 5 parts by

weight of component (B) based on 100 parts by weight for the total quantity of components (A) and (B) with the proviso

(i) that the equivalent weight of (A) is at least 1.5 times greater than the equivalent weight of (B);

(ii) that when component (A) has an average functionality of from 2 to about 8 and an OH equivalent weight of from about 1000 to about 3000 and either (a) an end cap of at least two moles of ethylene oxide per active hydrogen atom or (b) an internal block of at least three moles of ethylene oxide residues per active hydrogen atom, then component (B) need not be present; and

(iii) that a mixture of components (A) and (B) or component (A) when employed alone has a Brookfield viscosity employing a No. 2 spindle at 12 rpm of at least about 100 centipoise at 25° C.;

(2) components (A), (B) and (C) are employed in quantities so as to provide an NCX:OH ratio of from about 0.85:1 to about 2:1,

(3) component (E) is employed such that an unfrothed mixture of the unfilled urethane forming components (A), (B), (C), (E) and (F) obtains a viscosity of greater than about 10,000 centipoise at 25° C.±0.5° C. in less than about 40 minutes; and

(4) component (F) is present in a quantity of from about 0.02 to about 0.5 parts per 100 parts by weight of the combined weight of components (A) and (B) and is of such composition and quantity so as to provide the foam with a cell count of greater than 16 per 0.0025 square inches (0.016 cm^2) at a position approximately midway between the substrate-foam interface and the outer edge of the foam.

4,483,895

ABSORBENT APRON FOR HIGH CHAIRS AND THE LIKE

Viola M. Deaver, 1742 Danford St., Naples, Fla. 33942

Filed Jul. 6, 1982, Ser. No. 394,895
Int. Cl.³ B32B 27/14
U.S. Cl. 428—198 3 Claims

1. A disposable absorbent apron for use on the floor beneath a high chair or the like comprising:

a liquid impervious sheet of extruded plastic film for contact with the floor having a thickness between 0.001th and 0.003ths of an inch, and

an upper liquid absorbent layer composed of fibers bonded together to form a mat having a thickness between 1/16th and ¼th of an inch,

said plastic sheet and fibrous layer being joined together throughout their interface, and

said apron being square with sides measuring five feet in length, said upper liquid absorbent layer having sufficient bulk, surface area and porosity so that it will absorb and retain spills of liquid and semi-solid food deposited on the apron from the chair and all spilled food will be removed upon disposal of the apron.

4,483,896

CARPET SEAMING TAPE WITH SEPARATE HEATING CIRCUITS

James B. Gray, San Diego; Peter L. Jorgenson, El Cajon, and Robert A. Joyce, La Mesa, all of Calif., assignors to Seam Team, El Cajon, Calif.

Filed Feb. 4, 1983, Ser. No. 464,132
Int. Cl.³ B32B 3/00
U.S. Cl. 428—200 19 Claims

1. An electrically activated seaming tape comprising:

an elongated thin flat flexible backing strip;

a plurality of beads of heat sensitive adhesive mounted on and extending along the length of said tape; and

a plurality of electrical resistance heating circuits defined by a plurality of conductors mounted on and extending transverse to said strip and terminating with electrical contact means adjacent to the side edges of said backing strip for selectively applying a source of electrical voltage in sequence to said circuits along said strip for heating said adhesive.

4,483,897

NON-WOVEN FABRIC

Isao Fujimura; Sadaaki Nakajima; Morio Abe, and Masahiko Taniguchi, all of Shigaken, Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Apr. 23, 1984, Ser. No. 602,805
Int. Cl.³ D04H 1/58
U.S. Cl. 428—288 1 Claim

1. A non-woven fabric having a weight of 10~50 g/m^2, and the structure of said non-woven fabric is stabilized by adhesion of heat adhesive fibers, characterized by the composition consisting of at least 30 wt. % of foamed fibers made of polypropylene or polyester having a single fiber fineness of 0.5~6 deniers, at least 20 wt. % of heat adhesive fibers and balance of other kinds of fibers, wherein the foamed fiber is any of conjugate fiber of sheath-core type or side-by-side type and only sheath component in the case of sheath-core type conjugate fiber or only a component dominantly forming the fiber surface along the direction of fiber axis in the case of side-by-side conjugate fiber substantially contains foamed cells and a part of the foamed cells are bursted out the fiber surface.

4,483,898

LIQUIDS WITH REDUCED SPREADING TENDENCY

Harold Schonhorn, New Providence, and Louis H. Sharpe, Morris Township, Morris County, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 17, 1982, Ser. No. 358,859
Int. Cl.³ B05D 5/12; B32B 25/00
U.S. Cl. 428—356 23 Claims

1. Method for producing an article, the method comprising producing, from a substance comprising a multi-constituent liquid, on an existing surface, a layer having a shape substantially conforming to a predetermined geometry, the liquid being an adhesive or a liquid comprising a component selected from the group consisting of epoxies, polyesters, acrylics, and silicons, the liquid also comprising an effective amount of a material herein designated inhibitor, the inhibitor being capable of forming a film on the surface, with the film-coated surface having a critical surface tension of wetting that is less than the surface tension of the inhibitor-containing liquid, characterized in that

(a) the layer produced from the liquid is at room temperature an adherent, substantially solid layer,

(b) the inhibitor is selected from the class defined by the formula $[CX_3—(CH_2)_n]_N—R$, where X is H or F, Y is H, F, or Cl, n is a number from 1 to 12, R is a carboxylic acid, an amide, a substituted amide, an amine, an alcohol, or an ester functionality, and N is 1 when R is not an alcohol or amine functionality, but N is 1, 2, or 3 when R is an alcohol or amine functionality, and

(c) the inhibitor is soluble in at least one of the constituents of the liquid to the extent necessary to result in a concentration of at least about 0.05%, by weight of the liquid, of dissolved inhibitor in the liquid.

4,483,899

INFRARED REFLECTION-PREVENTING FILM

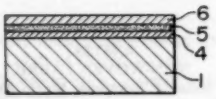
Tetsuo Kuwabara, Tokyo, Japan, assignor to Tokyo Kogaku Kikai Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 230,067, Jan. 29, 1981, abandoned. This application Nov. 29, 1982, Ser. No. 444,985

Claims priority, application Japan, Jan. 29, 1980, 55-8896

Int. Cl.³ B32B *7/02*

U.S. Cl. 428—213 **3 Claims**



1. An infrared reflection-preventing film comprising an infrared optical substrate and at least a first layer of titanium oxide on the optical substrate and a second layer of zinc sulfide on the first layer, the layers satisfying the relationships:

$$n_1d_1+n_2d_2=\lambda o/4$$

and

$$10\ nm \leqq n_1d_1 \leqq 50\ nm$$

where n_1d_1 is an optical thickness of said first layer, n_2d_2 is an optical thickness of said second layer, and λo is a center wavelength of a desired reflection-preventing wavelength band.

4,483,900

POLYTETRAFLUORETHYLENE-POLYURETHANE COATED FABRIC

Ralph Goldfarb, Huntington, N.Y., assignor to Oakwood Industries, Inc., Huntington Station, N.Y.

Filed Jul. 15, 1982, Ser. No. 398,653

Int. Cl.³ B32B *7/00*

U.S. Cl. 428—262 **30 Claims**

1. A coated fabric comprising a base fabric having a coating comprising a composition comprising the combination of polyurethane and polytetrafluoroethylene (PTFE) and a polymeric suspension agent, wherein the polyurethane is present in a predominant amount on a dry weight basis, said coated fabric having pores so as to repel water droplets while transmitting water vapor so as to be both water repellent and breathable.

4,483,901

SELECTIVELY GAS-PERMEABLE COMPOSITE MEMBRANE AND PROCESS FOR PRODUCTION THEREOF

Koichi Okita, and Sigeru Asako, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

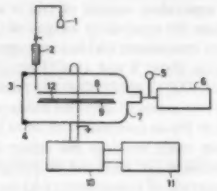
Filed Apr. 18, 1983, Ser. No. 486,179

Claims priority, application Japan, Apr. 16, 1982, 57-64506

Int. Cl.³ B05D *3/06*; B32B *9/04*

U.S. Cl. 428—315.5 **11 Claims**

1. A selectively gas-permeable membrane comprising a polymeric material support and a thin membrane desposited on the support, said thin membrane being obtained by glow discharge plasma polymerization of an organosilane compound containing at least one double bond or triple bond.



4,483,902

RECORD CARRIER

Dietrich J. Bahr, Herrenberg, and Marian Briska, Boeblingen, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 31, 1980, Ser. No. 202,547

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1980, 3007330

Int. Cl.³ G01D *15/34*; B32B *5/16, 29/04*

U.S. Cl. 428—330 **6 Claims**

1. A record carrier comprising a substrate, a lacquer layer and a metallic layer, characterized in that the lacquer layer comprises a heat-resistant lacquer containing about 0.5 to 5 percent by weight of finely distributed, fine particle calcium carbonate having a particle size ranging from about 2 μm to 10 μm.

4,483,903

DRY-SPUN HOLLOW POLYACRYLONITRILE FIBRES AND FILAMENTS AND PROCESS FOR THE PRODUCTION THEREOF

Ulrich Reinehr; Kurt Beraklau, both of Dormagen; Hans K. Burghart, Neuss; Toni Herbertz, Dormagen, and Hermann-Josef Jungverdorben, Grevenbroich, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 311,493, Oct. 15, 1981,. This application Sep. 6, 1983, Ser. No. 529,652

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1980, 3040971

Int. Cl.³ D02G *3/00*; B28B *21/54*

U.S. Cl. 428—373 **1 Claim**

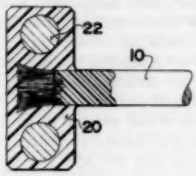
1. Dry-spun hollow acrylonitrile fibres and filaments which consist essentially of acrylonitrile homo and co-polymers having at least 50 percent by weight of polymerized acrylonitrile units, which have a water retention capacity of at least 10 percent, which fibre has a core/sheath structure wherein the core is disposed about the hollow of said acrylonitrile fibre which hollow is in the form of an internal, linear continuous channel.

4,483,904

CONNECTING FIBRE REINFORCED PULTRUSIONS

Kenneth S. Church, Box 1186, Gimli, Manitoba, Canada (R0C 1B0)

Filed Apr. 26, 1983, Ser. No. 488,670
Int. Cl.³ B32B 9/04; B29B 3/00; B27F 1/10
U.S. Cl. 428—543 20 Claims



8. A method of forming a fibre reinforced body comprising providing a first body portion having reinforcing fibres embedded therein and having at one part thereof the reinforcing fibres exposed and splayed, applying onto the exposed fibres a settable liquid moulded to define a second body portion so that the liquid enters the spaces between the splayed fibres and setting the liquid so that the first and second portions form a structure integrated by the exposed fibres.

4,483,905

HOMOGENEOUS IRON BASED POWDER MIXTURES FREE OF SEGREGATION

Ulf F. I. Engström, Höganäs, Sweden, assignor to Hoganas AG, Höganäs, Sweden

Filed Feb. 20, 1981, Ser. No. 236,559
Claims priority, application Sweden, Mar. 6, 1980, 8001764
Int. Cl.³ B22F 1/00
U.S. Cl. 428—570 6 Claims

1. In a non-compacted powder composition formed by mechanical mixing primarily comprising an iron-based powder selected from the group consisting of iron and steel powder together with a minor amount of at least one alloying powder, the improvement wherein said composition further comprises in intimate contact with said iron-based powder and said at least one alloying powder from 0.005 to 1.0 percent by weight of a binding agent in solid or liquid state for said iron-based powder and said alloying powder whereby segregation and/or dusting of the iron-based powder and said at least one alloying powder is essentially precluded, with said mechanical mixing used to form said composition having been conducted while said binding agent is provided as a liquid.

4,483,906

COPPER FOIL FOR A PRINTED CIRCUIT AND A METHOD FOR THE PRODUCTION THEREOF

Hiroshi Nakatsugawa, Yokohama, Japan, assignor to Furukawa Circuit Foil Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 244,785, Mar. 17, 1981,. This application Mar. 18, 1983, Ser. No. 476,248
Claims priority, application Japan, Apr. 8, 1980, 55-45197
Int. Cl.³ C25D 7/06, 5/48; B32B 15/01
U.S. Cl. 428—607 2 Claims

1. An improved composite copper foil useful in the manufacture of printed circuits comprising a copper foil layer and at least one nickel layer which is substantially sulfur-free, said nickel layer being integral with and coating at least one surface of said copper foil,

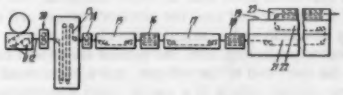
the improvement comprising said composite copper foil coated with said nickel layer having been immersed in and said nickel layer cathodically electrolized in a chromic acid bath to treat the surface of said nickel layer so that said composite foil becomes readily and completely removable by etching in ammonium persulfate etchant, said chromic acid bath consisting essentially of an aqueous solution of chromic acid or an aqueous solution of an alkali metal salt or an ammonium salt of chromic acid or dichromic acid, and said nickel foil having a thickness of from 0.002 to 0.8 micron prior to having been immersed in said chromic acid bath.

4,483,907

MANUFACTURE OF TINPLATE AND TINPLATE CONTAINERS

Dietmar F. E. Salm, Bulli, Australia, assignor to The Broken Hill Proprietary Company Limited, Melbourne, Australia

Continuation-in-part of Ser. No. 228,375, Jan. 26, 1981, abandoned, which is a continuation of Ser. No. 13,917, Feb. 22, 1979, abandoned. This application Feb. 9, 1982, Ser. No. 347,166
Claims priority, application Australia, Feb. 23, 1978, PD3490
The portion of the term of this patent subsequent to May 1, 2001, has been disclaimed.
Int. Cl.³ C25D 5/48, 7/06
U.S. Cl. 428—629 12 Claims



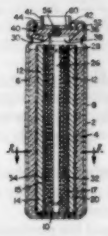
1. A method of producing an unreflowed electrolytic tinplate comprising electrodepositing coatings of tin on at least one face of strip steel from an electrolyte containing stannous tin and fluoride ions, rinsing the coated strip in a rinsing agent containing a concentration of fluoride ions not less than 8 g/l and, due to carry-over of electrolyte on the coated strip, stannous tin ions, and subjecting the coated strip to a passivation treatment to produce a chromium oxide coating mass; wherein the tin is electrodeposited on said at least one face to a coating mass of between 0.8 and 2 g/m², the ratio of fluoride ions to stannous tin ions (F^-:Sn^{++}) in the rinsing agent is not less than 10:1, and the chromium oxide coating mass on the exterior of the strip after the passivation treatment is between 0.004 and 0.007 g/m².

4,483,908

INTUMESCENT MATERIAL-COATED GALVANIC CELLS

Herman M. Zimmerman, Lakewood, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 30, 1983, Ser. No. 537,565
Int. Cl.³ H01M 14/00
U.S. Cl. 429—8 10 Claims

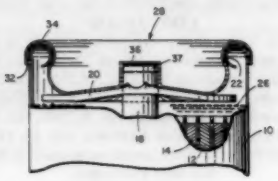


1. A galvanic cell comprised of a cell housing characterized in that an unexpanded layer of a heat-activatable intumescent material is disposed about at least a portion of the exterior of said cell housing.

4,483,909
ELECTROCHEMICAL CELL WITH PRESSURIZED LIQUID ELECTROLYTE

Gerhart P. Klein, Manchester, Mass., assignor to Duracell Inc., Bethel, Conn.

Filed Jun. 22, 1981, Ser. No. 276,148
Int. Cl.³ H01M 4/00
U.S. Cl. 429—94 3 Claims

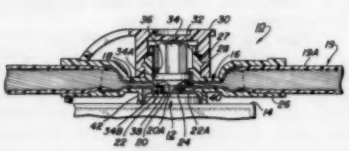


1. An electrochemical cell comprising a pressurized cell can having a narrowed open end; an electrochemical cell system disposed within the cell can, the electrochemical cell system including an anode and a cathode convolutely wound, a current collector projecting from the wound anode and cathode towards the open end of the cell can, and a pressurized liquid electrolyte solvent which is a gas at room temperature and atmospheric pressure, all operatively associated; one of said anode and cathode connected to the current collector, a cell cover crimped over the narrowed end of the cell can in electrical contact with the current collector; an insulative material disposed between the cell can and cover thereby electrically insulating the cell can from the cell cover; and an insulative member wider than the narrowed end of the cell can but narrower than the full internal diameter of the cell can disposed between the wound anode and cathode, and the narrowed end of the cell can; and the current collector having been forced through the member whereby electrical short circuits between either of said anode or cathode and the cell cover are prevented.

4,483,910
SEALED BATTERY CABLE TERMINATION

Victor J. Julian, 2400 Belvue, Westchester, Ill. 60153

Filed Apr. 8, 1983, Ser. No. 483,144
Int. Cl.³ H01M 2/30
U.S. Cl. 429—179 9 Claims



1. A termination assembly for connecting an electric cable to a terminal stud of a battery, said terminal stud including a raised shoulder portion disposed adjacent to a battery case and a threaded stud portion, said assembly comprising in combination

a tubular terminal member into which said cable extends,

means electrically and mechanically connecting said terminal member to said cable,

said terminal member and the portion of said cable located in said terminal member having an aperture extending therethrough from the top to the bottom thereof for receiving said threaded stud portion when said terminal member is positioned against said shoulder,

an insulating cover molded of a resilient plastic directly over the top and bottom surfaces of said terminal member and having openings formed therein above and below said terminal member in alignment with said aperture,

said cover including an integral annular sleeve portion surrounding said aperture and extending upwardly from the top surface of said terminal member,

a nut disposed in said sleeve for threaded engagement with said threaded stud portion,

said terminal member being provided on said top surface with and annular recess surrounding said aperture,

said nut having a bottom surface substantially complementary to the surface of said recess, and said complementary surface of said nut depending into said recess into engagement with said top surface of said terminal member when said nut is tightened onto said stud,

the bottom surface of said terminal member being provided with a raised annular surface surrounding said aperture for engagement with said shoulder throughout an annular area surrounding said threaded stud portion when said nut is tightened onto said stud, and

said plastic cover including an integral tubular skirt surrounding and spaced from said raised annular surface,

the internal diameter of said skirt, when stressed, being substantially greater than the external diameter of said annular shoulder, and

said skirt depending below said raised annular surface by a distance exceeding the distance between the top surface of said shoulder and the surface of said battery case immediately surrounding said annular shoulder,

whereby the tightening of said nut on said stud provides a good electrical and solid mechanical connection between said terminal member and said terminal stud and a pressure seal between said plastic cover and said battery case to prevent acid fumes leaking from said battery along the surface of said terminal stud from escaping to the ambient.

4,483,911
PHOTOCONDUCTIVE MEMBER WITH AMORPHOUS SILICON-CARBON SURFACE LAYER

Kyosuke Ogawa, Sakurashin; Shigeru Shirai, Yamato; Junichiro Kanbe, Yokohama; Keishi Saitoh, Tokyo, and Yoichi Osato, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 17, 1982, Ser. No. 450,772
Claims priority, application Japan, Dec. 28, 1981, 56-213384; Dec. 28, 1981, 56-213385; Dec. 28, 1981, 56-213386
Int. Cl.³ G03G 5/082
U.S. Cl. 430—65 18 Claims

1. A photoconductive member which comprises a support for a photoconductive member and an amorphous layer comprising a first layer region overlying the support and a second layer region overlying the first layer region, the first layer region having photoconductivity comprising an amorphous material which comprises silicon atoms as a matrix and at least one member selected from the group consisting of hydrogen atoms and halogen atoms as a constituent, the first layer region having a layer region (I) containing an impurity capable of controlling the electroconductivity type at the support side, and the second layer region comprising an amorphous material selected from the group consisting of an amorphous material (1) composed of silicon and carbon atoms of the formula: Si_aC_{1-a} $(0<a<1)$, an amorphous material (2) composed of silicon, carbon and hydrogen atoms of the formula: $(Si_bC_{1-b})_cH_{1-c}$ $(0<b, c<1)$ and an amorphous material (3) composed of silicon, carbon and halogen (X) atoms, and if desired, additionally hydrogen atom of the formula: $(Si_dC_{1-d})_e(X, H)_{1-e}$ $(0<d, e<1)$.

4,483,912
IMAGING SYSTEM WITH MICROCAPSULES CONTAINING PHOTOHARDENABLE OR PHOTOSOFTENABLE COMPOSITION

Frederick W. Sanders, Chillicothe, Ohio, assignor to Mead Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 458,749, Jan. 17, 1983, abandoned. This application Feb. 2, 1984, Ser. No. 576,238

Int. Cl.³ G03C *5/54, 1/68, 1/495*

U.S. Cl. 430—138 **18 Claims**

1. A coating composition for use in photoimaging said coating composition comprising a chromogenic material, rupturable microcapsules which contain a photohardenable or photosoftenable photosensitive composition, and a thermal initiator; said coating composition being characterized in that images are formed by imagewise exposing a coating of said composition to actinic radiation and rupturing said microcapsules in the image areas such that said chromogenic material can react with an associated co-reactive developer material to form a color image and said thermal initiator reacts with the photosensitive composition following capsule rupture to provide image stability upon aging.

4,483,913
PLANOGRAPHIC PRINTING PLATE

Nils Eklund, Croton-on-Hudson, and Jen-chi Huang, Ossining, both of N.Y., assignors to Polychrome Corporation, Yonkers, N.Y.

Filed Jul. 18, 1983, Ser. No. 514,408

Int. Cl.³ G03C *1/78*

U.S. Cl. 430—160 **7 Claims**

1. A method for preparing a planographic printing plate starting from an anodized, grained and/or etched metal substrate having a hydrophilic sealing layer on at least one surface thereof, which method comprises contacting said starting metal substrate with a solution of a hydrophilic monomer or polymer of an organic compound having at least one cationic, quaternary substituted ammonium group with substituents selected from the group consisting of alkyl groups having from 1–25 carbon atoms and aryl groups having from 1 to 20 carbon atoms, to form an overlying layer, and then coating said overlaying layer with a photosensitive diazo material.

4,483,914
HEAT-DEVELOPABLE COLOR PHOTOGRAPHIC MATERIAL

Hideki Naito; Hiroshi Hara, and Kozo Sato, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 4, 1982, Ser. No. 439,170

Claims priority, application Japan, Nov. 5, 1981, 56-177611

The portion of the term of this patent subsequent to Oct. 2, 2001, has been disclaimed.

Int. Cl.³ G03C *5/54, 1/40*

U.S. Cl. 430—203 **43 Claims**

1. A heat-developable color photographic material, comprising a support having thereon a layer containing a light-sensitive silver halide, an organic silver salt oxidizing agent, a hydrophilic binder, a reducing agent for the substance selected from the group consisting of the silver halide and the organic silver salt oxidizing agent and a dye releasing compound, wherein the dye releasing compound releases a hydrophilic diffusible dye and is represented by the following general formula:

C—L—D

wherein C represents a moiety capable of bonding to an oxidized product which is formed by a reaction between a reducing agent and an organic silver salt oxidizing agent; D represents a dye portion for forming an image; and L represents a connection group between C and D and the bond between C and L is cleaved upon the reaction of C with the oxidized product of the reducing agent releasing the hydrophilic dye.

39. A method of forming a color image which comprises imagewise exposing the heat-developable color photographic material as claimed in claim 1, developing the exposed color photographic material by uniformly heating to release a hydrophilic diffusible dye and transferring the diffusible dye into an image receiving material.

4,483,915
AZO DYE RELEASING COMPOUNDS WITH HYDROLYTIC REMOVABLE GROUP FOR DYE DIFFUSION TRANSFER PROCESS

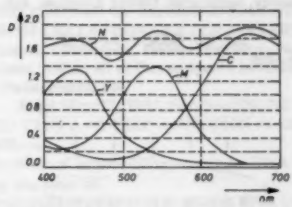
Christian C. Van de Sande, Belsele; Armand M. Van den Bergh, Berchem, and Wilhelmus Janssens, Aarschot, all of Belgium, assignors to Agfa-Gevaert, N. V., Mortsel, Belgium

Filed Nov. 29, 1983, Ser. No. 556,197

Claims priority, application United Kingdom, Dec. 7, 1982, 8234827

Int. Cl.³ G03C *1/10, 1/40, 5/54*

U.S. Cl. 430—223 **10 Claims**



1. A photographic silver halide material comprising a support carrying at least one unexposed alkali-permeable silver halide hydrophilic colloid emulsion layer containing, or being in operable contact with a compound which is immobile in an alkali-permeable colloid medium when contacted with an alkaline liquid and which is capable of being reduced by a silver halide developing agent at a rate slower than that of the said silver halide when in developable state, and when in reduced state is capable of releasing a dye moiety, characterized in that said compound corresponds in reduced state to general formula (1) and in oxidized state to general formula (2):

$$A^1—L—P \quad (1)$$

$$A^2—L—P \quad (2)$$

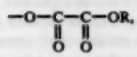
wherein:

A^1 represents a hydroquinonyl group or such group that makes part of a fused ring system,

A^2 represents a quinonyl group or such group that makes part of a fused ring system,

L represents a bivalent group which undergoes a cleavage under hydrolytic alkaline conditions when the compound is in reduced state corresponding to formula (1),

P represents an organic dye moiety incorporating an azo chromophoric group —N=N— linked through a conjugated bond system to an electron-withdrawing group being a monoester oxalyl group



wherein R represents an organic group that can be introduced by esterification of a carboxylic acid group, said monoester oxalyl group being removable by hydrolysis resulting in a residual auxochromic hydroxyl (—OH) group.

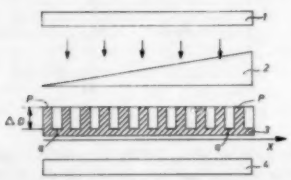
8. Photographic material according to claim 1, comprising one or more photosensitive silver halide emulsion layers, a supported non-light-sensitive receptor layer, and an alkali-permeable light-reflective opaque layer between and integral with said silver halide emulsion layers and said supported receptor layer.

4,483,916

IMPROVING THE COLOR BALANCE OF MULTICOLOR PRINTS BY EXPOSURE THROUGH CONTRAST REDUCING LIGHT DISTRIBUTION MEANS

Christiaan G. Thiers, Schoten, Belgium, assignor to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Feb. 2, 1983, Ser. No. 463,287
Claims priority, application United Kingdom, Feb. 11, 1982, 8204034
Int. Cl.³ G03C 5/54, 7/18
U.S. Cl. 430—236 13 Claims



1. A method of improving the colour balance of a multicolour reversal image obtained in a photographic material itself or obtained by a diffusion transfer reversal process in an image receiving material, said method comprising the steps of:

(1) providing a photographic silver halide material capable of yielding in said material or in an image receiving layer a multicolour reversal image,

(2) image-wise exposing said photographic material to or through a multicolour continuous tone original while keeping in the optical path between the light source and the photographic material a light-distribution means dividing the light in line-like or dot-like portions over the exposed area of the photographic material,

(3) developing and reversal-processing said photographic material, characterized in that the said material and said developing and processing are such that if the above image-wise exposure were to have been effected without said light-distribution means using a sensitometric grey wedge as original a reversal wedge print would be produced having blue filter (Wratten filter Blue No. 47), red filter (Wratten filter Red No. 25) and green filter (Wratten filter Green No. 58) sensitometric curves (optical density versus log exposure curves) having a maximum density of at least 1.4 and an average gradient of at least 1.8, said average gradient being the slope of the straight line joining the density point 0.2 above fog and the density point 0.2 below maximum density on the sensitometric curves of said wedge print, whereas because the image-wise exposure was effected through said light-distribution means as specified in step (2), blue filter, red filter and green filter sensitometric curves as defined above are obtained the average gradients of which are at most 1.50 but not lower than 1.00.

4,483,917

PHOTORESIST STRIPPER COMPOSITION AND METHOD OF USE

Wesley L. Archer; Susan M. Dallessandro, both of Midland, Mich., and Vicki A. Lynn, Indianapolis, Ind., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 465,975, Feb. 14, 1983, Pat. No. 4,438,192.
This application Jan. 9, 1984, Ser. No. 569,093
Int. Cl.³ B08B 3/08; C11D 7/50; C23G 5/02
U.S. Cl. 430—329 4 Claims

1. In a process for stripping crosslinked photoresist polymer which employs a mixture of methylene chloride and methanol the improvement which comprises employing said mixture additionally containing methyl formate, and wherein the methanol and methyl formate are each present in an amount of from about 1 to about 10 volume percent of the total mixture and wherein the total amount of methanol and methyl formate is at least about 5 and not more than 10 volume percent of the total mixture.

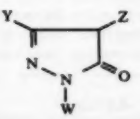
4,483,918

COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Nobuo Sakai; Yoshimasa Aotani; Yoshiharu Yabuki, and Nobuo Furutachi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

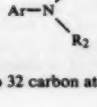
Filed Dec. 14, 1982, Ser. No. 449,803
Claims priority, application Japan, Dec. 16, 1981, 56-204447
Int. Cl.³ G03C 7/40, 7/26
U.S. Cl. 430—372 35 Claims

33. A method of forming a color image comprising developing an imagewise exposed silver halide color photographic light-sensitive material comprising a support having coated thereon at least one silver halide emulsion layer, the color photographic light-sensitive material having at least one layer containing at least one kind of 5-pyrazolone type 2-equivalent magenta coupler represented by the following general formula (Ia):



(Ia)

wherein W represents a phenyl group substituted with at least one halogen atom, an alkyl group having 1 to 22 carbon atoms, an alkoxy group having 1 to 22 carbon atoms, an alkoxycarbonyl group having 2 to 22 carbon atoms or a cyano group; Y represents an acylamino group having 1 to 32 carbon atoms or an anilino group having 6 to 44 carbon atoms; and Z represents an aryloxy group having 6 to 32 carbon atoms, an alkoxy group having 1 to 32 carbon atoms, a heterocyclic oxy group, an alkylthio group having 1 to 32 carbon atoms, an arylthio group having 6 to 32 carbon atoms, a heterocyclic thio group, an acylthio group having 1 to 32 carbon atoms, an acylamino group having 1 to 32 carbon atoms, a sulfonamido group having 1 to 32 carbon atoms, an alkoxycarbonylamino group having 2 to 32 carbon atoms, an aryloxycarbonylamino group having 7 to 32 carbon atoms or a nitrogen containing heterocyclic group which is bonded to the active position of the pyrazolone ring through the nitrogen atom, and at least one compound for preventing stain represented by the following general formula (II):



(II)

wherein R_1 has up to 32 carbon atoms and represents a substi-

tuted or unsubstituted alkyl group, a substituted or unsubstituted aralkyl group, a substituted or unsubstituted cycloalkyl group or a substituted or unsubstituted alkenyl group; R_2 represents a hydrogen atom or a substituent same as defined for R_1; Ar has up to 60 carbon atoms and represents an unsubstituted phenyl group, or a substituted phenyl group or a substituted naphthyl group substituted with at least one member selected from the group consisting of a halogen atom, a carboxy group, a substituted or unsubstituted alkyl group having 1 to 32 carbon atoms, a substituted or unsubstituted alkoxy group having 1 to 32 carbon atoms, a substituted or unsubstituted aralkyl group having 7 to 32 carbon atoms, a substituted or unsubstituted alkenyl group having 2 to 32 carbon atoms, a substituted or unsubstituted cycloalkyl group having 5 to 32 carbon atoms, a substituted or unsubstituted alkylthio group having 1 to 32 carbon atoms, a substituted or unsubstituted phenyl group, a substituted or unsubstituted aryloxy group having 6 to 32 carbon atoms, a substituted or unsubstituted acylamino group having 1 to 32 carbon atoms, a substituted or unsubstituted carbamoyl group having 1 to 32 carbon atoms, a substituted or unsubstituted sulfonamido group having 1 to 32 carbon atoms and a substituted or unsubstituted sulfamoyl group having 1 to 32 carbon atoms, and when two or more substituents are present on the phenyl group or the naphthyl group, these may be the same or different; and R_1 and R_2 may be bonded to each other to form a ring or each of R_1 and R_2 may be bonded to the ring represented by Ar to form a ring with an aqueous alkaline solution containing a color developing agent.

4,483,919

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Hidetoshi Kobayashi; Isamu Itoh; Yasuhiro Yoshioka; Keiji Mihayashi, and Noriyuki Inoue, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

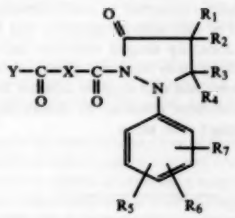
Filed Dec. 23, 1983, Ser. No. 564,659

Claims priority, application Japan, Dec. 28, 1982, 57-229349

Int. Cl.³ G03C *1/02*

U.S. Cl. 430—566 **9 Claims**

1. A silver halide photographic light-sensitive material containing at least one compound represented by the following general formula (I):



(I)

wherein R_1 and R_2 each independently represent a hydrogen atom or an alkyl group; R_3 and R_4 each independently represent a hydrogen atom, an alkyl group, an alkoxycarbonyl group or an aryl group; R_5, R_6 and R_7 each independently represent a hydrogen atom, a halogen atom, an alkyl group, an alkoxy group, an aryl group, a carbonamido group or a sulfonamido group; X represents a divalent linkage group represented by the following general formula (II) or (III):

(II)

(III)

wherein R_8 represents a hydrogen atom, an alkyl group, an alkenyl group, an aryl group, a halogen atom, an alkoxy group or an alkylthio group; R_9 and R_{10} each independently represent a hydrogen atom, a halogen atom, an alkyl group or an aryl group, provided R_9 and R_{10} may jointly form a benzene ring; and n represents an integer of 2 or 3;

and Y represents —OH,

or R_{13}

wherein R_{11} represents a hydrogen atom, an aryl group or an alkyl group; R_{12} represents a hydrogen atom or an acyl group; and R_{13} represents a hydrolyzable group.

4,483,920

IMMOBILIZATION OF MESSAGE RNA DIRECTLY FROM CELLS ONTO FILTER MATERIAL

David Gillespie, Glenmoore; Isadore Brodsky, Narberth, and Joel Bresser, Aldan, all of Pa., assignors to Hahnemann University, Philadelphia, Pa.

Filed May 17, 1982, Ser. No. 378,711

Int. Cl.³ C12Q *1/68;* C12P *19/34;* C12N *15/00, 11/12*

U.S. Cl. 435—6 **4 Claims**

1. A method of immobilizing message RNA from cells, comprising the steps of:

A. Solubilizing cells containing message RNA by mixing the cells with an aqueous solution of a chaotropic salt selected from the group consisting of sodium iodide, potassium iodide, and sodium perchlorate;

B. thereafter filtering the mixture resulting from step (A) through a filter which selectively binds and immobilizes said message RNA; and

C. baking by heating the filter resulting from step (B) to further bond said message RNA to the filter material.

4,483,921

IMMUNOASSAY WITH ANTIGEN OR ANTIBODY LABELED LIPOSOMES SEQUESTERING ENZYME

Francis X. Cole, Stow, Mass., assignor to Collaborative Research, Inc., Lexington, Mass.

Continuation of Ser. No. 222,815, Jan. 12, 1981, Pat. No. 4,342,826, which is a continuation-in-part of Ser. No. 117,864, Feb. 4, 1980, abandoned. This application Apr. 28, 1982, Ser. No. 372,756

The portion of the term of this patent subsequent to Aug. 3, 1999, has been disclaimed.

Int. Cl.³ G01N *33/54*

U.S. Cl. 435—7 **32 Claims**

1. An immunoreactive, stable liposome labeled with one of an antigen or its cognate antibody said liposome sequestering an enzyme carried within it, and having a signal to noise ratio of no less than 5 to 1.

22. An immuno test method for determining antigen or its cognate antibody, the steps comprising combining a stable liposome labeled with one of the antigen or its cognate antibody, said liposome sequestering an enzyme carried within it and having a signal to noise ratio of no less than 5 to 1, with a substrate and a material to be tested along with an aget for permitting rapid exposure of the substrate to the enzyme under the test conditions whereby some of said exposure may occur within said liposome and can be visually detected.

4,483,922

INACTIVATION OF ENZYMES

Charles R. Carpenter, Seguin; Robert H. Dodge, New Braunfels, and Kenneth A. Rosanoff, Seguin, all of Tex., assignors to AMF Inc., White Plains, N.Y.

Filed May 14, 1982, Ser. No. 378,441
Int. Cl.³ C12N 9/99; C12Q 1/00, 1/44, 1/42, 1/32
U.S. Cl. 435—184 15 Claims

1. A method of reducing enzyme activity in a serum with a minimum effect on other constituents in the serum comprising contacting the serum with an enzyme inactivating amount of a peracetic acid to produce a treated serum, wherein the inactivating amount is from about 0.2% to about 1% peracetic acid by weight of serum, wherein said serum does not degrade an amount of enzyme sensitive labile peptide mixed therein for at least about 96 hours, and wherein the enzymes are selected from the group consisting of:

alkaline phosphatase,
proteases,
gamma glutamyl transpeptidase (GGT),
lactate dehydrogenase (LDH),
creatinin phosphokinase (CPK), and
lipase.

4,483,923

MICROBIOLOGICAL PROCESS FOR REMOVING NON-IONIC SURFACE ACTIVE AGENTS, DETERGENTS AND THE LIKE FROM WASTEWATER AND MICROORGANISM CAPABLE OF SAME

James E. Blair, Roanoke, Va., assignor to Sybron Corporation, Rochester, N.Y.

Continuation of Ser. No. 158,758, Jun. 12, 1980, Pat. No. 4,317,885, which is a division of Ser. No. 35,045, May 1, 1979, Pat. No. 4,274,954. This application Dec. 11, 1981, Ser. No. 329,859
The portion of the term of this patent subsequent to Mar. 2, 1999, has been disclaimed.
Int. Cl.³ C12N 1/20
U.S. Cl. 435—253 1 Claim

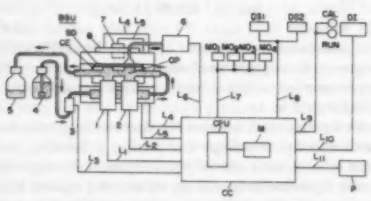
1. A microorganism *Pseudomonas fluorescens* 3P having the identifying characteristics of ATCC-31483, said microorganism being capable upon culturing in wastewater containing anionic and/or nonionic surface active agents, and detergents of utilizing such as an assimilable source of carbon.

4,483,924

SYSTEM FOR CONTROLLING A PRINTER IN A BLOOD SUGAR ANALYZER

Nobuhiko Tsuji; Keijiroh Nakamura, both of Yokosuka; Koichi Endoh, Hino; Toshiyoshi Hamada, and Keiichi Ishida, both of Tokyo, all of Japan, assignors to Fuji Electric Company, Ltd., Kanagawa, Japan

Filed Nov. 23, 1981, Ser. No. 324,147
Claims priority, application Japan, Dec. 9, 1980, 55-172660; Dec. 9, 1980, 55-172657
Int. Cl.³ G01N 35/00, 33/66
U.S. Cl. 435—288 4 Claims



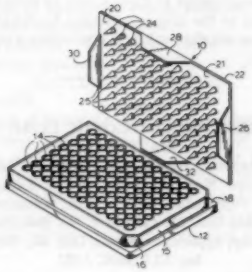
1. A blood sugar analyzer having a reaction cell which houses a fixed enzyme membrane and a measuring electrode and which receives a blood specimen, to cause a chemical reaction between the blood specimen and the fixed enzyme membrane, for measuring the blood sugar concentration in the blood specimen on the basis of a reaction current generated in the measuring electrode by the chemical reaction, and including means for monitoring the temperature in the reaction cell, means for displaying informational data on the temperature to an operator in response to said monitoring means, and manually actuable input means for providing a test display signal, and wherein said display means displays a predetermined character pattern in response to said test display signal.

4,483,925

LIQUID REMOVAL DEVICE

William L. Noack, Camarillo, Calif., assignor to Becton, Dickinson and Company, Paramus, N.J.

Filed Dec. 30, 1982, Ser. No. 454,760
Int. Cl.³ G01N 33/48, 37/00
U.S. Cl. 435—293 13 Claims



1. A device for removing liquids from a plurality of separated liquid-containing wells comprising:

a substantially planar support member; and a plurality of wicking elements connected to and distributed over one planar surface of said support member, said wicking elements being conically shaped with the narrowest parts thereof projecting away from said planar surface, and said wicking elements and said support member being formed of a liquid absorbent material, to absorb liquids which come into contact with same.

4,483,926

METHOD FOR MEASURING ANTIBIOTIC LEVELS IN BLOOD SERUM

George M. Fukui; Herbert J. Spencer, and Laurens R. Williams, II, all of Irving, Tex., assignors to Abbott Laboratories, North Chicago, Ill.

Division of Ser. No. 147,794, May 8, 1980, Pat. No. 4,340,679. This application May 3, 1982, Ser. No. 373,829
Int. Cl.³ C12Q 1/06
U.S. Cl. 436—16 1 Claim

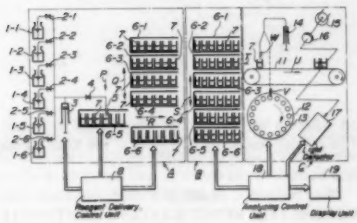
1. A method for measuring antibiotic levels in blood serum comprising:

intermixing blood serum with a growth medium containing an effective amount of salicylate to neutralize growth inhibiting substances present, and monitoring progressive growth of bacteria in the mixture.

4,483,927
METHOD OF AUTOMATICALLY ANALYZING CHEMICAL SUBSTANCES AND AN AUTOMATIC CHEMICAL ANALYZER

Hiroshi Takekawa, Kunitachi, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 15, 1981, Ser. No. 254,489
Claims priority, application Japan, Apr. 18, 1980, 55-50254
Int. Cl.³ G01N *35/02, 35/04, 35/06*
U.S. Cl. 436—43 5 Claims



1. A method of automatically analyzing chemical substances of different kinds contained in a number of sample liquids comprising the steps of:

(a) delivering a given amount of a reagent selected from a plurality of reagents of different kinds, required to measure the substances of different kinds, into each of a plurality of reaction vessels in each of a plurality of reaction vessel cassettes by means of a reagent delivery unit, whereby a plurality of cassettes, each containing a plurality of reaction vessels filled with the same reagent, is prepared prior to sample addition and analysis in said filled reaction vessels;

(b) stocking a reaction vessel supply unit with a plurality of said cassettes, each cassette containing a plurality of reaction vessels into which the same reagent has been delivered;

(c) selecting in any sequence any one of the cassettes stocked in the reaction vessel supply unit and containing a plurality of reaction vessels containing a reagent related to the substance to be measured for a sample liquid by displacing said cassette into a reaction vessel removal position while said cassette is maintained in said supply unit;

(d) removing and supplying a reaction vessel from the selected cassette into an analyzing unit;

(e) delivering a given amount of the sample liquid from a sampler in the analyzing unit into the reaction vessel supplied into the analyzing unit;

(f) allowing a given reaction to proceed in the reaction vessel to form a test liquid;

(g) measuring the test liquid contained in the reaction vessel to quantify the given substance in the sample liquid; and

(h) repeating said steps (c) to (g) for successive sample liquids, while said step (a) of delivering the reagent is controlled independently from the step (e) of delivering the sample liquid, in the course of which repetition, at least one cassette is selected while a previously selected cassette still contains at least one reaction vessel and remains in said supply unit.

4,483,928
MICROCAPSULES SENSITIZED WITH ANTIBODY AND A METHOD FOR MEASUREMENT OF LYMPHOCYTE USING THE SAME BASED ON CELL-MEDIATED IMMUNITY

Tatsuo Suzuta, Tokyo, and Nobuo Hiratsuka, Saitama, both of Japan, assignors to Fuji Photo Film Co., Ltd., Saitama, Japan

Filed Sep. 7, 1982, Ser. No. 415,300
Claims priority, application Japan, Sep. 7, 1981, 56-140668
Int. Cl.³ G01N *33/54*
U.S. Cl. 436—519 8 Claims

1. A method for measuring cells based on cell-mediated immunity which comprises applying a microcapsule sensitized with antibody to antigen of lymphocyte and sheep red cells to lymphocyte at the same time and then independently measuring the distinguishable cells from each other.

4,483,929
LIPOSOMES WITH GLYCOLIPID-LINKED ANTIBODIES

Frank C. Szoka, San Francisco, Calif., assignor to Liposome Technology Incorporated, Menlo Park, Calif.

Filed May 3, 1982, Ser. No. 374,031
Int. Cl.³ G01N *33/54, 33/58*
U.S. Cl. 436—533 9 Claims

1. An immunoreactive liposome reagent for use in the determination of a chemical compound capable of entering into an immunospecific reaction with a known antibody, said reagent comprising

a suspension of liposomes containing reporter molecules, and

a surface array of molecules of such antibody attached to the liposomes through glycolipid molecules anchored in the liposomes and linked to the antibody molecules by a diimidazole coupling agent.

4,483,930
CERAMIC FIBER COMPOSITION

Thomas E. Walters, Johnson City, Tenn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Feb. 22, 1983, Ser. No. 468,228
Int. Cl.³ C03C *13/14*
U.S. Cl. 501—36 4 Claims

1. A refractory fiber composition suitable for uses as thermal insulation in temperature ranges of from 650° C. to 1100° C. formed from a melt consisting essentially of 65 percent to 95 percent by weight aluminum silicate particles and 5 percent to 35 percent feldspar.

4,483,931
LEAD GALLATE GLASSES

William H. Dumbaugh, Jr., Painted Post, and Brian P. Tyndell, Beaver Dams, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Mar. 21, 1983, Ser. No. 476,929
Int. Cl.³ C03C *3/12*
U.S. Cl. 501—41 4 Claims

1. A stable binary glass exhibiting refractive indices greater than 2.4 and infrared transmitting characteristics out to wavelengths of 8 microns consisting, expressed in terms of weight percent on the oxide basis, of about 15–28% Ga_2O_3 and 72–85% PbO.

2. A stable ternary glass exhibiting infrared transmitting characteristics out to 8 microns consisting essentially, ex-

pressed in terms of weight percent on the oxide basis, as included within the area generally encompassed by the curve in

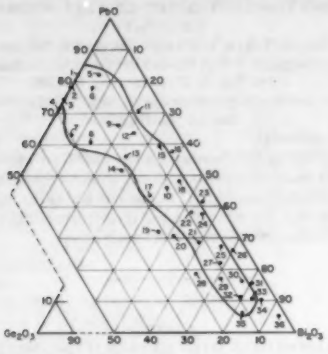


FIG. 2 of about 10–85% PbO, 5–30% Ga_2O_3, and including Bi_2O_3 in amounts not more than 85%.

4,483,932

REFRACTORY BODIES FOR CORROSIVE ENVIRONMENTS

Malcolm E. Washburn, Princeton, and Charles W. Taylor, Clinton, both of Mass., assignors to Norton Company, Worcester, Mass.

Filed Nov. 7, 1983, Ser. No. 549,114

Int. Cl.³ C04B *35/04, 35/12*

U.S. Cl. 501—117 **20 Claims**

1. A hollow refractory body for service in molten coal slag, said body comprising magnesium chromite and chromia to the extent of at least 96% by weight and having a bulk density of at least 3.5 gm/cm^3, a sufficient wall thickness so that the permeation of water through said wall is not greater than 2.0 cm^3 of water per cm^2 of area of wall surface per hour, a mean pore diameter not greater than 9 microns, and an upper bound of not more than 20 microns on the diameter of an individual pore among the group of smallest diameter pores which together aggregate to at least 90% of the total pore volume.

4,483,933

SEMICONDUCTOR CERAMIC COMPOSITION

Takashi Kobayashi, Yokaichi, and Motoi Nishii, Omihachiman, both of Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

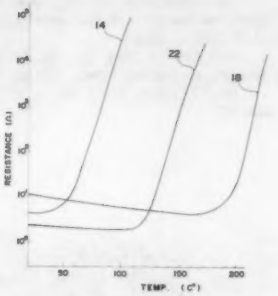
Continuation-in-part of Ser. No. 359,901, Mar. 19, 1982, abandoned. This application Apr. 13, 1984, Ser. No. 600,336

Claims priority, application Japan, Mar. 24, 1981, 56-43727

Int. Cl.³ H01B *1/06;* **C04B** *35/46*

U.S. Cl. 501—138 **7 Claims**

1. A semiconductor ceramic composition of a barium titanate system having a specific resistance of 400 ohm-cm or less, consisting essentially of a main component containing a small amount of one or more semiconductor- forming elements, and additives of manganese oxide and silica, said main component consisting essentially of 30 to 95 mol % of $BaTiO_3$, 3 to 25 mol % of $CaTiO_3$, 1 to 30 mol % of $SrTiO_3$ and 1 to 50 mol % of $PbTiO_3$, said semiconductor-forming elements being selected from the group consisting of rare earth elements, Nb, Bi, Sb, W and Th, and being present in an amount of 0.2 to 1.0 mol %, wherein the content of manganese oxides is 0.03 to 0.10 mol % in terms of Mn with respect to one mole of the main component, and wherein the content of silica is 0.5 to 5 mol % in terms of SiO_2 with respect to one mole of the main component.



4,483,934

PROCESS FOR BENEFICIATING BENTONITE

Howard Goodman, and Ian S. Bleakley, both of Cornwall, England, assignors to English Clays Lovering Pochin & Co., Ltd., St. Austell, United Kingdom

Filed May 10, 1983, Ser. No. 493,353

Claims priority, application United Kingdom, May 14, 1982, 8214170

Int. Cl.³ C01B *33/13*

U.S. Cl. 501—147 **10 Claims**

1. A process for beneficiating raw bentonite which process comprises the steps of:

(i) treating a raw bentonite, as mined, to reduce substantially surface staining by iron oxides;

(ii) treating the substantially iron oxide-free bentonite, as an aqueous suspension, with an alkali at a temperature of at least 60° C.;

(iii) dewatering the aqueous suspension of alkali-treated bentonite;

(iv) washing the dewatered bentonite solids from step (iii) at least once with water;

(v) resuspending the alkali-treated and washed bentonite in water;

(vi) subjecting the suspension formed in step (v) to shearing, attrition an impact forces in a homogeniser of the type wherein the suspension is forced in the form of a film through a thin, hard surfaced gap under a pressure of at least 1.7 MPa and at high velocity; and

(vii) drying the suspension of bentonite.

4,483,935

PRODUCT FOR THE ACTIVATION OF AN ELECTROLYTIC CELL

Isaac M. Diller, New York, N.Y.

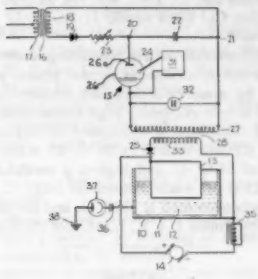
Division of Ser. No. 701,200, Jun. 30, 1976, Pat. No. 4,324,624, which is a continuation of Ser. No. 428,779, Dec. 27, 1973, abandoned, which is a division of Ser. No. 003,668, Jan. 19, 1970, Pat. No. 3,806,433, which is a continuation-in-part of Ser. No. 241,895, Dec. 3, 1962, Pat. No. 3,244,604, which is a continuation-in-part of Ser. No. 305,768, Aug. 30, 1963, Pat. No. 3,392,092, which is a continuation-in-part of Ser. No. 539,906, Apr. 4, 1966, abandoned. This application Sep. 10, 1981, Ser. No. 300,942

Int. Cl.³ C04B *35/00*

U.S. Cl. 501—151 **1 Claim**

1. A product for producing and maintaining the activation of a cryolite-alumina melt by the addition of the product to the melt, the product comprising cryolite material which has been transformed by activation in a cryolite-alumina melt and which

has been permitted to freeze, the cryolite material having been transformed at a temperature which is above the melting point of the cryolite material by an amount less than that sufficient to prevent freezing upon activation, the activation of the cryolite



material being achieved by subjecting the crystal lattice of the cryolite material to strains induced mechanically, thermally, or electrically to an extent that is within the activation continuum of cryolite material obtained from an activated melt.

4,483,936

MODIFIED ZEOLITE CATALYST COMPOSITION FOR ALKYLATING TOLUENE WITH METHANOL TO FORM STYRENE

Huei-Cheng Liu, Oakland, and Ralph J. Spohn, Woodcliff Lake, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Apr. 22, 1983, Ser. No. 487,585
Int. Cl.³ B01J *29/14, 29/16*
U.S. Cl. 502—74 **14 Claims**

1. A composition capable of catalyzing the side chain alkylation of toluene with methanol comprising a crystalline aluminosilicate zeolite of the faujasite structure with a SiO_2:Al_2O_3 mole ratio of from about 2 to about 8 and having present therein (1) at least one alkali metal selected from the group consisting of Cs, K, and Rb; (2) at least one metal selected from the Group of M metals consisting of Mn, Fe, Cu, and Zn; and (3) at least one member selected from the group consisting of boron and phosphorus.

4,483,937

MODIFIED ZEOLITE CATALYST COMPOSITION FOR ALKYLATING TOLUENE WITH METHANOL TO FORM STYRENE

Huei-Cheng Liu, Oakland, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Apr. 22, 1983, Ser. No. 487,586
Int. Cl.³ B01J *29/08, 29/16*
U.S. Cl. 502—73 **14 Claims**

1. A composition capable of catalyzing the side chain alkylation of toluene with methanol comprising a crystalline aluminosilicate zeolite of the faujasite structure with a SiO_2:Al_2O_3 mole ratio of from about 2 to about 8 and having present therein (1) at least one alkali metal selected from the group consisting of Cs, K, and Rb; (2) at least one metal selected from the Group of M metals consisting of Li, Ce, Cr, and Ag; and (3) at least one member selected from the group consisting of boron and phosphorus.

4,483,938

POLYMERIZATION OF ETHYLENE OR ETHYLENE/α OLEFIN MIXTURES IN THE PRESENCE OF IMPROVED TITANIUM/VANADIUM CATALYST

Richard W. Rees, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 30, 1981, Ser. No. 335,632
Claims priority, application Canada, Jan. 6, 1981, 367952
Int. Cl.³ C08F *4/64*
U.S. Cl. 502—115 **8 Claims**

1. A coordination catalyst obtained by combining a first component with a second component,

the first component being prepared by a method selected from the group consiting of (i) admixing a solution of an organoaluminum compound in inert hydrocarbon solvent with a solution of titanium tetrachloride and vanadium oxytrichloride in inert hydrocarbon solvent at a temperature of less than about 30° C. and heating the resultant admixture to a temperature of from about 150° to about 300° C. for a period of from about 5 seconds to about 60 minutes and (ii) admixing a solution of an organoaluminum compound in inert hydrocarbon solvent with a solution of titanium tetrachloride in inert hydrocarbon solvent at a temperature of less than about 30° C., heating the resultant admixture to a temperature of from about 150° to about 300° C. for a period of from about 5 seconds to about 60 minutes and admixing vanadium oxytrichloride with the admixture so obtained, said organoaluminum compound having the formula AlR_nX_{3-n} and being admixed with the titanium and vanadium compounds so that in the first component the atomic ratio of aluminum to titanium and vanadium is in the range of from about 0.2 to about 2.0 and the atomic ratio of titanium to vanadium is in the range of from about 1:1 to about 30:1

said second component being a solution of organoaluminum compound in inert hydrocarbon solvent, said organoaluminum compound also having the formula AlR_nX_{3-n},

said first and second components being combined so that in the second component the atomic ratio of aluminum to titanium and vanadium is in the range of from about 0.7 to about 5; where R is alkyl, cycloalkyl, aryl or alkyl-substituted aryl and has 1–20 carbon atoms, n=1, 1.5, 2 or 3 and X is chlorine or bromine.

4,483,939

PROCESS FOR PRODUCING POLYOLEFIN

Kazuo Baba; Kizuku Wakatsuki; Toshimi Sato, all of Ichihara, and Tadashi Hikasa, Chiba, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Aug. 9, 1982, Ser. No. 406,449
Claims priority, application Japan, Aug. 12, 1981, 56-127223
Int. Cl.³ C08F *4/64, 4/68*
U.S. Cl. 502—127 **11 Claims**

1. A solid catalyst component for olefin polymerization comprising a titanium compound and/or a vanadium compound supported on a solid product derived from the reaction of a phenol, an aromatic carboxylate ester, and a solid reaction product of an organomagnesium compound and an aryloxyaluminum compound represented by the general formula $Al(OR^1)_3$, wherein R^1 represents an aryl group having 6 to 20 carbon atoms.

4,483,940

METHOD FOR MANUFACTURE OF HONEYCOMB CATALYST

Tetsuji Ono, Amagasaki; Shoichi Ichihara, Toyonaka; Tomohisa Ohata, Suita, and Sadao Terui, Osaka, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

Filed Dec. 20, 1982, Ser. No. 451,475

Claims priority, application Japan, Nov. 24, 1981, 56-186943; Dec. 1, 1981, 56-191795; Dec. 22, 1981, 56-206245

Int. Cl.³ B01J 31/06

U.S. Cl. 502—159 23 Claims

1. A method for the manufacture of a honeycomb carrier of enhanced resistance to thermal shocks, which method comprises applying a coat of a water-soluble high-molecular organic compound to the surface of a ceramic honeycomb carrier of monolithic construction and subsequently depositing a catalyst component on the resultant coated carrier.

4,483,941

CATALYSTS FOR ALKOXYLATION REACTIONS

Kang Yang, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Filed Sep. 2, 1982, Ser. No. 414,216

Int. Cl.³ B01J 31/02, 31/12, 31/14

U.S. Cl. 502—171 2 Claims

1. Catalysts for alkoxylation reactions comprising at least one material selected from the group consisting of mixtures of BF_3 and metal alkoxides, mixtures of SiF_4 and metal alkoxides, or mixtures of these, wherein the metal alkoxides have the general formula $M(OR)_n$ wherein each R is, independently, alkyl groups containing from 1 to 20 carbon atoms, M is aluminum or titanium, and n is 3 or 4 depending on the valence of M.

4,483,942

PROCESS OF PREPARING HYDROGENATION CATALYSTS

Yasuo Sekido, Yokohama; Akira Inoue, Kawasaki; Masao Mori, Yokosuka, and Tatsuki Kubo, Kawasaki, all of Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Filed Oct. 11, 1983, Ser. No. 540,781

Claims priority, application Japan, Oct. 15, 1982, 57-180864; Dec. 6, 1982, 57-213617

Int. Cl.³ B01J 21/04, 21/12, 23/86, 23/88

U.S. Cl. 502—255 2 Claims

1. A process for the production of hydrogenation catalysts which comprises preparing a solution having 5–30 percent by weight as the oxide of at least one of a chromate, a molybdate or a tungstate salt and 1–8 percent by weight as oxide of at least one of Group VIII metal salts, adding a stabilizer, which is citric acid in the amount of 0.1–0.28 mole per mole of MoO_3, CrO_3 or WO_3 or malic acid in the amount of 0.1–0.3 mole per mole of MoO_3, CrO_3 or WO_3, adding ammonia gas to adjust the solution to a pH of 7–11, impregnating an alumina or silica-alumina carrier with said solution, drying and then calcining the impregnated solution at 500°–600° C.

4,483,943

GAS CONVERSION CATALYSTS

Hassan Windawi, Arlington Heights, and Michael H. Quick, Palatine, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Apr. 7, 1983, Ser. No. 483,039

Int. Cl.³ B01J 21/04, 23/06, 23/22, 23/72

U.S. Cl. 502—342 2 Claims

1. A catalyst for the production of methanol which comprises a solid composite of calcined compounds of copper, zinc and aluminum containing vanadium as a modifier.

4,483,944

ALUMINUM TITANATE-MULLITE CERAMIC ARTICLES

John P. Day, Big Flats, and Irwin M. Lachman, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jul. 27, 1983, Ser. No. 517,751

Int. Cl.³ B01J 21/02, 21/06, 21/12

U.S. Cl. 502—439 3 Claims

1. A sintered ceramic article containing aluminum titanate and mullite as the predominant crystal phases and which is characterized by grain boundary and intracrystalline microcracking, said article exhibiting high refractoriness, excellent thermal shock resistance, a coefficient of thermal expansion (R.T.—1000° C) less than 25×10^{-7}/°C. when sintered at temperatures of 1400° C. and higher, a modulus of rupture greater than 2500 psi when sintered at 1400° C. and greater than 5000 psi when sintered at 1500° C., and having a composition bounded by Points I, J, K, L, M, I of the drawing.

4,483,945

PROCESS OF PREPARING VESICULATED POLYESTER GRANULES

Michael P. Beresford, Bourne End, England; Susan E. Potter, Frankston, and Philip J. A. Ritchie, St. Kilda, both of Australia, assignors to Dulux Australia Ltd., Clayton, Australia

Filed Aug. 10, 1983, Ser. No. 521,666

Claims priority, application Australia, Aug. 10, 1982, PF5317; Jul. 21, 1983, PG0407

Int. Cl.³ C08V 9/28

U.S. Cl. 521—62 7 Claims

1. A process of preparing vesiculated granules of crosslinked carboxylated polyester resin by a process comprising the steps of (a) forming a water-in-oil emulsion by dispersing water in a solution of a carboxylated unsaturated polyester resin having an acid value of from 5–50 mg.KOH/g in an ethylenically unsaturated monomer, in the presence of a base selected from

(i) a water-soluble polyamine which contains at least three amine groups per molecule and which has a dissociation constant (pKa value) of 9.5–10.5,

(ii) a metal oxide, hydroxide or salt wherein the metal cation is chosen from the group consisting of calcium, magnesium, barium, titanium, zinc, lead, strontium and cobalt, the salt being one wherein the pK_a value of the conjugate acid of the anion is greater than 2; (b) dispersing the emulsion in water to form a dispersion of the water-in-oil emulsion-in-water

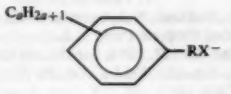
the dispersion additionally containing a surfactant, and

(c) initiating free radical polymerisation to crosslink the polyester and monomer and give crosslinked, vesiculated granules, characterised in that

(d) where a water-soluble polyamine is used, there are present from 0.3–4.0 amine groups per polyester carboxyl group;

(e) where a metal oxide, hydroxide or salt is used, there is present from 0.8–1.8 equivalents of metal cation per equivalent of polyester carboxyl group; and

(f) the surfactant comprises a species of the formula



where

a is 5–12;

where

R is an alkylene oxide chain having from 2–12 alkylene oxide units selected from ethylene oxide, propylene oxide and butylene oxide, the units being selected such that when there is present in the chain alkylene oxide which is not ethylene oxide, such alkylene oxide shall comprise on average a maximum of two units per chain

and such chain shall additionally comprise on average at least 3 ethylene oxide units; and

where

X is an anion having a pK_1 of less than 2.

4,483,946

REFRACTORY, HEAT-INSULATING LINER

Andrew Barnes, 37 Garland Way, Northfield, Birmingham, and Raymond W. Yates, 12 Brookhouse Road, Broadway, Walsall, West Midlands, both of England

Continuation of Ser. No. 276,827, Jun. 24, 1981, abandoned. This application Jan. 24, 1983, Ser. No. 460,263

Claims priority, application United Kingdom, Jun. 25, 1980, 8020844

Int. Cl.³ B28B *7/36*

U.S. Cl. 523—145 **6 Claims**

1. A preformed shaped, refractory, heat-insulating metallurgical vessel liner produced by forming an aqueous slurry of a dry mixture comprising, by weight:

A. 1 to 4 percent of urea-formaldehyde resin,

B. 1 to 6 percent of starch as binder,

C. 0.5 to 5 percent of water-soluble borate compound, and

D. 75–95 percent of a particulate refractory material,

dewatering the slurry in a permeable mold and heating to dry the shaped mixture and harden the binder.

4,483,947

MOLDING COMPOSITIONS CONTAINING TRIKETOIMIDAZOLIDINE PRECONDENSATES, THEIR USE, AND A PROCESS FOR PREPARING A TRIKETOIMIDAZOLIDINE PRECONDENSATE COMPOSITE SUITABLE FOR THIS PURPOSE

Franz Jakob, Hofheim am Taunus, and Ernst Höroldt, Kelkheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 31, 1982, Ser. No. 413,472

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1982, 3206128

Int. Cl.³ C08K *3/04*

U.S. Cl. 523—156 **13 Claims**

1. A molding composition comprising

(a) as a reactive filler, 2,4,5-triketoimidazolidine precondensates having terminal groups selected from oxamide ester groups, urethane groups, isocyanate groups and mixtures thereof in the form of a composite of (a_1) a 2,4,5-triketoimidazolidine precondensate pulp and (a_2) a pulp of other fiber-forming polymers or, instead of this pulp (a_2), fibers made of 2,4,5-triketoimidazolidines, polyaramides, polyacrylonitriles, polyoxadiazoles, polybenzimidazoles, fibers based on phenolic resins or cellulose cr carbon or mixtures of various fibers

(b) a customary filler selected from the group consisting of organic fillers, inorganic fillers and mixtures thereof, and

(c) at least one further reactive component of a binder which is a polymerisation resin having functional groups.

4,483,948

ANTIOXIDANTS AND REINFORCED POLYMERS AND OIL-IN-WATER EMULSIONS OF ANTIOXIDANTS

Albert E. Tamosauskas, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 190,153, Sep. 24, 1980, Pat. No. 4,341,677, which is a division of Ser. No. 137,063, Apr. 3, 1980, abandoned. This application Apr. 5, 1982, Ser. No. 365,712

Int. Cl.³ C08L *67/02*

U.S. Cl. 523—205 **20 Claims**

1. A method of reducing chemical degradation of fibrous reinforced polymeric materials from thermal aging, wherein the fibrous reinforcement had been treated with a sizing composition prior to its use as reinforcement in the polymeric material, comprising:

(a) incorporating into the fibrous reinforced polymeric material an antioxidant selected from hindered phenolic or diaryl amine antioxidants having low volatility, and good thermal stability, and good polymer compatibility in an amount of at least about 0.25 part per hundred part of resin and reinforcement in excess of any amount of antioxidant present in the fibrous reinforcement to protect the polymer in processing of the fibrous reinforced polymeric material and to protect the polymeric material in the fibrous, reinforced polymeric material from degradation due to oxygen, ozone and water so that there is protection of the fiber reinforced polymeric material from chemical degradation due to chemical interactions between the chemistry present on the fibrous reinforcement and/or reaction and/or thermal decomposition products of said chemistry and the polymer of the fibrous reinforced polymeric material.

4,483,949

POLYETHYLENE TEREPHTHALATE BLENDS

John Semen; Jesse D. Jones, and Edwin D. Hornbaker, all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Aug. 22, 1983, Ser. No. 524,869

Int. Cl.³ C08L *67/02*

U.S. Cl. 523—514 **24 Claims**

1. A thermoplastic composition which comprises in intimate admixture:

(a) a polyethylene terephthalate, and

(b) a copolymer of a vinyl aromatic compound and an α,β-unsaturated cyclic anhydride, said copolymer being a rubber-modified graft copolymer or a rubber-free copolymer,

(c) a fibrous modifier, and

(d) a nucleating agent.

4,483,950

MODIFIED STARCHES AS EXTENDERS FOR ABSORBENT POLYMERS

George F. Fanta, Peoria; William M. Doane, Morton, both of Ill., and Edward I. Stout, Shawnee Mission, Kans., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Dec. 10, 1982, Ser. No. 448,675

Int. Cl.³ C08L *3/02, 3/04*

U.S. Cl. 524—48 **10 Claims**

1. A method for preparing an extended starch-based superabsorbent material comprising:

a. blending into an aqueous dispersion of a gelatinized starch-graft copolymer reaction product, either prior to or subsequent to saponification of said product, a dextrin extender characterized by an inherent viscosity in the range of about 0.05 to 0.60 dl./g. at 0.5% (w/v) in 1N NaOH; and

b. drying the saponified blend to a moisture content of from about 1 to 15% water by weight.

4,483,951

RADIATION CURABLE ADHESIVE COMPOSITIONS AND COMPOSITE STRUCTURES

Walter Brenner, Teaneck, N.J., assignor to The Standard Products Company, Cleveland, Ohio

Division of Ser. No. 045,863, Jun. 6, 1979, Pat. No. 4,319,942. This application Dec. 2, 1981, Ser. No. 326,903

Int. Cl.³ C08L *7/02, 9/02, 9/06, 15/00*

U.S. Cl. 524—82 **8 Claims**

1. An adhesive composition capable of being cured by high energy ionizing radiation comprising:

between about 10 to about 80 percent of a material with elastomeric properties which comprises at least one material selected from the group consisting of natural rubber; acrylonitrile-butadiene rubber; polybutadiene rubber; polyisoprene rubber; styrene-butadiene rubber; polychloroprene elastomer; perfluoroalkoxy resin; ethylene-

chlorotrifluoromethane copolymer; terpolymer of ethyl acrylate, acrylonitrile and vinyltrioxy silane; fluorocarbon elastomer; polysulfide elastomer; and organo-silicon polymer;

between about 90 to about 10 percent of an ethylenically unsaturated polymerizable monomer which comprises at least one material selected from the group consisting of styrene, methyl acrylate, ethyl acrylate, butyl acrylate, methyl methacrylate, ethyl methacrylate, butyl methacrylate, ethylene glycol dimethacrylate, trimethylpropane trimethacrylate, vinyl toluene, diallylphthalate, triallylisocyanurate, triallylcyanurate, diallylmaleate, diallylsebacate, and vinyl pyrrolidone;

between about 2 to about 20 percent of a tackifier which comprises at least one material selected from the group consisting of phenolic-modified terpene resins, copolymers of vinyltoluene and alpha-methylstyrene monomers, and maleic-resin and resin-modified and unmodified phenolformaldehyde-type polymers; and

between about 0.2 to about 10 percent of an adhesion promoter which comprises at least one material selected from the group consisting of variously substituted silanes, metal salts of long chain acids, methacrylic or acrylic acids and their esters, and hydroxyalkylacrylates or methacrylates.

4,483,952

POLYOLEFIN RESIN COMPOSITION COMPRISING A DIBENZYLIDENE SORBITOL DERIVATIVE

Hiroshi Uchiyama, Hirakata, Japan, assignor to E.C. Chemical Ind. Co., Ltd. and Itoh & Co., Ltd., both of Osaka, Japan

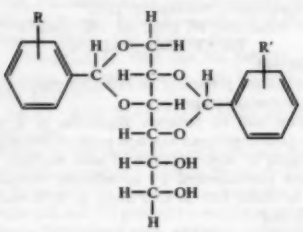
Filed Apr. 22, 1983, Ser. No. 487,834

Claims priority, application Japan, Apr. 23, 1982, 57-67169

Int. Cl.³ C08L *23/06, 23/12;* C08K *5/15*

U.S. Cl. 524—108 **12 Claims**

1. A polyolefin resin composition consisting essentially of at least one homopolymer or copolymer of an aliphatic monoolefin and 0.05 to 2% by weight, based on the weight of the composition, of a dibenzylidene sorbitol derivative of the following formula



wherein R and R′ are different from each other and each represents a member selected from the class consisting of a hydrogen atom, alkyl groups having 1 to 3 carbon atoms and alkoxy groups having a C_1–C_3 alkyl moiety.

4,483,953

POLYPHENYLENE ETHER RESINS AND COMPOSITIONS HEAT STABILIZED WITH TRINEOPENTYLENE DIPHOSPHITE

Robert J. Axelrod, Glenmont, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 315,892, Oct. 28, 1981, abandoned. This application Sep. 12, 1983, Ser. No. 531,610

Int. Cl.³ C08K *5/53*

U.S. Cl. 524—119 **8 Claims**

1. A thermoplastic composition which comprises an intimate admixture of a polyphenylene ether resin with trineopentylene diphosphite in an amount effective to provide thermal oxidative stability for the resin.

4,483,954

SILANES USEFUL AS WATER TREE AND ELECTRICAL TREE RESISTANT ADDITIVES

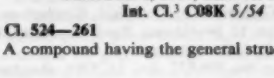
Harry Braus; Anthony Barlow, and Melvin F. Maringer, all of Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed Feb. 1, 1984, Ser. No. 575,976

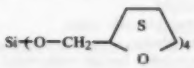
Int. Cl.³ C08K *5/54*

U.S. Cl. 524—261 **3 Claims**

1. A compound having the general structure



or



4,483,955

HIGH GLOSS POLYETHYLENE TEREPHTHALATE REINFORCED RESIN COMPOSITIONS

John Christiansen, Edison, and Shau-Zou Lu, Whitehouse Station, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 306,367, Sep. 25, 1981, Pat. No. 4,425,457, which is a continuation of Ser. No. 175,565, Aug. 6, 1980, abandoned. This application Feb. 3, 1982, Ser. No. 345,275

The portion of the term of this patent subsequent to Jan. 10, 2001, has been disclaimed.

Int. Cl.³ C08K *7/14*

U.S. Cl. 524—293 **10 Claims**

1. A reinforced polyethylene terephthalate molding resin composition suitable for use in preparing molded reinforced polyethylene terephthalate articles having gloss values of at least about 15 and heat distortion temperatures of at least about 200° C. at molding temperatures of from about 70° to about 110° C., consisting essentially of:

(a) from about 40 to about 95% by weight of polyethylene terephthalate having an inherent viscosity of at least 0.4;

(b) from about 4 to about 65% by weight of a substance selected from the group consisting of a reinforcing agent; a filler material; and a blend of a reinforcing agent and filler material;

(c) from about 0.2 to about 0.5% by weight of an alkali metal salt having an anion which is silicate, carbonate, or bicarbonate; and

(d) from about 0.5 to about 5.0% by weight of neopentylglycol dibenzoate.

4,483,956

ACRYLIC RESIN ARTICLE

Hiroshi Uchiyama, Hirakata, Japan, assignor to E. C. Chemical Ind. Co., Ltd. and C. Itoh & Co., Ltd., both of Osaka, Japan

Filed Apr. 19, 1983, Ser. No. 486,546

Claims priority, application Japan, Apr. 19, 1982, 57-63958

Int. Cl.³ C08K *5/05*

U.S. Cl. 524—384 **4 Claims**

1. An acrylic resin article consisting essentially of a methyl methacrylate polymer and dibenzylidene sorbitol or its derivative wherein the amount of dibenzylidene sorbitol or its derivative is from 0.1 to 3.0% by weight based on the total weight of the methyl methacrylate polymer and dibenzylidene sorbitol or its derivative.

3. A process for producing an acrylic resin article, which comprises placing in a mold a composition comprising a methyl methacrylate monomer or a mixture of a methyl methacrylate polymer and a methyl methacrylate monomer and

dibenzylidene sorbitol or its derivative, wherein the composition contains 0.1 to 3% by weight of dibenzylidene sorbitol or its derivative based on the total weight of the methyl methacrylate component and the dibenzylidene sorbitol component; and thereafter polymerizing the methyl methacrylate monomer in the composition.

4,483,957

ANTIPLASTICIZATION OF POLYMER COMPLEXES

Robert D. Lundberg, Bridgewater, and Robert R. Phillips, Spring Lake Hgts., both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Nov. 14, 1983, Ser. No. 551,106

Int. Cl.³ C08K *5/05*

U.S. Cl. 524—390 **22 Claims**

1. A method for increasing the viscosity of organic liquids, said organic liquid having a solubility parameter of from about 6 to about 10.5, which comprises incorporating in said organic liquid a minor amount of a polymer complex based on a sulfonated ionomer containing from about 4 to about 500 milliequivalents of functional groups/100 gms interacted with a polymer containing basic amine groups at a level of 4 to about 500 milliequivalents of functional groups per 100 gms of polymer, and about 1 to about 1000 parts per million by volume of a polar cosolvent.

4,483,958

THERMOPLASTIC POLYMER COMPOSITIONS COMPRISING AROMATIC POLYETHER AND AN INORGANIC FILLER

Nobutoshi Kosaka, deceased, late of Kanagawa, Japan (by Nobuko Kosaka, legal representative); Shinichi Izawa, Tokyo, and Jun Sugiyama, Kanagawa, both of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Continuation of Ser. No. 139,687, Apr. 14, 1980, abandoned. This application May 4, 1983, Ser. No. 489,396

Int. Cl.³ C08K *3/10, 3/34, 3/20*

U.S. Cl. 524—409 **42 Claims**

1. A thermoplastic polymer composition comprising:

(a) an aromatic polyether resin,

(b) a styrene polymer selected from the group consisting of polystyrene, poly-α-methylstyrene, styrene-acrylonitrile copolymer, styrene-methacrylonitrile copolymer, styrene-acrylic acid copolymer, styrene-methacrylic acid copolymer, and styrene-methacrylate ester copolymer; and/or a rubber-enforced styrene polymer containing a cross-linked conjugated diolefin polymer in a dispersed island state,

(c) an inorganic filler having an average diameter not larger than about 5 microns, and

(d) a thermoplastic elastomer selected from the group consisting of styrene-conjugated diolefin block copolymer and styrenic grafted polyolefin,

wherein the amount of said thermoplastic elastomer is in the range of from 10 to 50 parts by weight, based on 100 parts by weight of said inorganic filler.

4,483,959

ORGANIC PIGMENTS

William W. Maslanka, London-Britain Township, Chester County, Pa., and Gavin G. Spence, New Castle County, Del., assignors to Hercules Incorporated, Wilmington, Del.

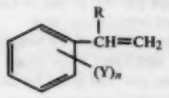
Division of Ser. No. 310,021, Oct. 13, 1981, Pat. No. 4,404,410, which is a division of Ser. No. 159,743, Jun. 16, 1980, Pat. No. 4,311,809, which is a division of Ser. No. 909,606, May 25, 1978, Pat. No. 4,235,982, which is a continuation-in-part of Ser. No. 803,330, Jun. 3, 1977, abandoned. This application Jun. 28, 1983, Ser. No. 508,632

Int. Cl.³ C08K *3/02, 3/20*

U.S. Cl. 524—457 **8 Claims**

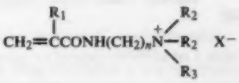
1. Water-insoluble graft copolymer particles consisting essentially of the free radical catalyzed graft copolymerization product of (1) at least one ethylenically unsaturated monomer (a) and at least one polyethylenically unsaturated monomer (b) in an amount at least sufficient to provide cross linked graft copolymer particles, and (2) a water-soluble cationic prepolymer having an RSV of about 0.1 to about 2.5 (1M NaCl, 1%, 25° C.), the prepolymer moiety of the graft copolymer particles being present on the surface of the particles,

said monomer (a) being selected from the group consisting of methyl alpha-chloroacrylate, ethyl alpha-chloroacrylate, methyl methacrylate, isopropyl methacrylate, phenyl methacrylate, vinyl chloride, acrylonitrile, methacrylonitrile, and monomers having the formula



wherein R is hydrogen or methyl, Y is methyl or chlorine, and n is 0, 1, 2, or 3, said monomer (b) being selected from the group consisting of divinylbenzene; diallyl phthalate; ethylene glycol dimethacrylate; 1,3-butylene glycol dimethacrylate; 1,6-hexanediol dimethacrylate; polyethylene glycol dimethacrylate; polypropylene glycol dimethacrylate; trivinylbenzene; divinylnaphthalene; diallyl maleate; diallyl fumarate; trimethylol propane trimethacrylate; and pentaerythritol tetraacrylate, and said prepolymer (2) being the addition polymerization product of

(i) about 5 mole percent to 100 mole percent of a cationic monomer having the formula



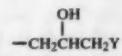
wherein

n is an integer 1, 2, or 3,

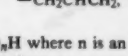
R_1 is hydrogen or methyl,

R_2 is hydrogen or a C_1–C_4 alkyl,

R_3 is hydrogen, a C_1–C_4 alkyl,



where Y is selected from the group consisting of hydroxyl and halogen,



or $-(CH_2CH_2O)_nH$ where n is an integer 1 or more and X^- is an anion, and

(ii) from about 95 mole percent to 0 mole percent of at least one monoethylenically unsaturated amide monomer,

the amount of prepolymer (2) employed in preparing the graft copolymer particles being from about 1 part to about 25 parts by weight for each 100 parts by weight of monomers (1) employed, said prepolymer moiety of the particles having chemically bonded thereto a cellulose reactive group, said group being introduced by means of an aldehyde.

4,483,960

EMULSION TYPE ADHESIVE COMPOSITIONS

Pawan K. Agarwal, Westfield, N.J.; S. Richard Turner, Rochester, N.Y.; Robert D. Lundberg, Bridgewater, N.J., and Morris L. Evans, Baton Rouge, La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Nov. 7, 1983, Ser. No. 548,984

Int. Cl.³ C08K *5/16;* **C08L** *41/00*

U.S. Cl. 524—499 **14 Claims**

1. An adhesive composition derived from a composition which consists of a mixture of:

(a) an emulsion of a metal neutralized sulfonated elastomeric co or terpolymer, said neutralized sulfonated co- or terpolymer having about 5 to about 250 meq. of neutralized sulfonated groups per 100 grams of said metal neutralized sulfonated co- or terpolymer; and

(b) about 25 to about 200 parts by weight of an emulsion of a hydrocarbon tackifying resin based on a petroleum or coal tar distillate per 100 parts by weight of said metal neutralized sulfonated elastomeric co- or terpolymer.

4,483,961

POLYMERIC CYCLOPENTADIENE DERIVATIVES, METHOD FOR PREPARING AND USE THEREOF

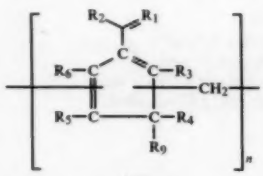
Diether Koch, Mettmann, Fed. Rep. of Germany; Bruce A. Gruber, Worthington, Ohio; Heimo J. Langer, and William R. Dunnavant, both of Columbus, Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Continuation-in-part of Ser. No. 300,786, Sep. 10, 1981, Pat. No. 4,412,088. This application Aug. 17, 1983, Ser. No. 524,050

Int. Cl.³ C08L *61/00*

U.S. Cl. 524—542 **36 Claims**

1. Polymeric cyclopentadiene derivative having recurring units of the formula I or isomers thereof or mixtures thereof:



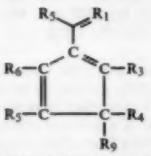
wherein each R_1 and R_2 individually is a hydrocarbon containing 1 to 10 carbon atoms, or a hydrocarbon containing one or more oxygen bridges, or a furyl group; or are interconnected and together with the carbon atom to which they are connected form a cycloaliphatic hydrocarbon group, or one of R_1 or R_2 is hydrogen; each R_3, R_4, R_5, R_6, and R_9 is individually hydrogen, methyl,—CH_2—, or

provided that two of R_3, R_5, R_6, and R_4 or R_9 are —CH_2— and that at least two of said R_3, R_4, R_5, R_6, and R_9 are hydrogen; and

wherein each R_7 and R_8 individually is a hydrocarbon group containing 1 to 10 carbon atoms, or a hydrocarbon group containing one or more oxygen bridges, or are interconnected and together with the carbon atoms to which they are connected form a cycloaliphatic hydrogen group, or one of R_7 or R_8 is hydrogen, or R_4 or R_5 or R_9 is:

and wherein n is at least 2.

32. A process for preparing polymeric cyclopentadiene derivative which comprises reacting cyclopentadiene derivative having the formula:



isomers, or mixtures thereof; wherein each R_1 and R_2 individually is a hydrocarbon containing 1 to 10 carbon atoms or a hydrocarbon containing one or more oxygen bridges in the chain and contains up to 10 carbon atoms; or are interconnected and together with the carbon atom to which they are connected form a cycloaliphatic hydrocarbon group or one of R_1 or R_2 is hydrogen; each R_3, R_4, R_5, R_6, and R_9 individually is hydrogen, methyl, or

or R_4 or R_9 or R_5 is

wherein each R_7 and R_8 individually is a hydrocarbon containing 1 to 10 carbon atoms or a hydrocarbon containing one or more oxygen bridges in the chain and containing up to 10 carbon atoms; or are interconnected and together with the carbon atom to which they are connected form a cycloaliphatic hydrocarbon group or furyl or one of R_7 or R_8 is hydrogen, and provided that at least four of R_3, R_4, R_5, R_6, and R_9 are hydrogen; with formaldehyde in the presence of a basic catalyst to provide a polymeric cyclopentadiene derivative; wherein about 0.1 to about 1 mole of formaldehyde per mole of said cyclopentadiene derivative is employed.

4,483,962

AQUEOUS ADHESIVE SYSTEMS

John S. Sadowski, Kutztown, Pa., assignor to Lord Corporation, Erie, Pa.

Filed Jul. 22, 1983, Ser. No. 515,991

Int. Cl.³ C08F *236/16*

U.S. Cl. 524—552 **17 Claims**

1. A terpolymer latex adhesive composition comprising

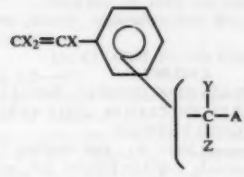
(A) on a dry weight basis, 100 parts by weight of latex consisting essentially of at least one emulsion-polymerized terpolymer of

(i) from 60 to 97 percent by weight, based on total weight of said terpolymer, of at least one 2,3-dihalo-1,3-butadiene conjugated diene monomer, wherein the halogen substituent is selected from the group consisting of chlorine, bromine or iodine;

(ii) from 2 to 23 percent by weight, based on total weight of said terpolymer, of at least one olefinically unsaturated first monomer which is at least copolymerizable

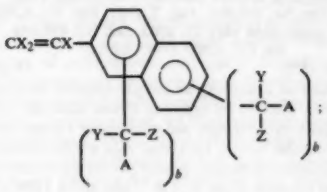
with the conjugated diene monomer and which is selected from the group consisting of at least one monoalkenyl aromatic alkyl halide compound having the formula

I.



; and

II.



wherein X is hydrogen, chlorine, bromine or iodine; Y is hydrogen, chlorine or bromine; Z is hydrogen, chlorine or bromine and A is hydrogen, chlorine, bromine or an alkyl group having from one to three carbon atoms, with the proviso that at least one of Y, Z or A is chlorine or bromine and, when A is alkyl, at least one of Y or Z is chlorine or bromine; a is one or two; and b is zero, one to two, with the proviso that at least one b be at least one; and

(iii) from 0.5 to 10 percent by weight, based on total weight of said terpolymer, of at least one olefinically unsaturated second monomer which is at least copolymerizable with the conjugated diene monomer and which is selected from the group consisting of olefinically unsaturated monomers which have at least one

group and at least one —COOH group, with the provisos that the olefinically unsaturated second monomer, (a), be polymerizable by unsaturation addition, and, (b), when the second monomer contains more than one

group, such groups are conjugated or cross-conjugated;

(B) at least one surfactant agent selected from the group consisting of anionic surfactant agents and a mixture of at least one anionic surfactant agent and at least one nonionic surfactant agent, the amount of said surfactant agent being in the range from 0.1 to 15 parts by weight, per 100 parts by weight of said conjugated diene total weight of said conjugated diene monomer, said olefinically unsaturated first monomer and said olefinically unsaturated second monomer and wherein, in said mixture of anionic and nonionic surfactant agents, the amount of anionic surfactant agent is in the range from 1.2 to 2.1 parts by weight per part by weight of said nonionic surfactant agent; and,

(C) water in an amount to provide an adhesive latex composition having a total solids content in the range from 5 to 60 percent.

4,483,963

HARDENABLE/CURABLE UNSATURATED POLYESTER BASED COMPOSITIONS

Jacques Meyer, Paris, France, assignor to Chloe Chimie, Puteaux, France

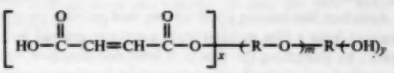
Filed Jun. 22, 1983, Ser. No. 506,776
Claims priority, application France, Jun. 30, 1982, 82 11449
Int. Cl.³ C08L *67/06*
U.S. Cl. 525—44 **14 Claims**

1. A hardenable, polyester based composition of matter comprising:

(i) an unsaturated polyester;

(ii) a polymerizable, ethylenically unsaturated monomer;

(iii) an oligoester of the formula:



(I)

in which the average value of x ranges from 1.5 to 2, y is equal to 2-x, R, which can vary from one recurring unit to the next, represents a linear or branched chain aliphatic radical having from 2 to 4 carbon atoms, and m is such that the number-average molecular weight of the polyether-polyol (II), HO R—O_m ROH, ranges from 500 to 4,000 and

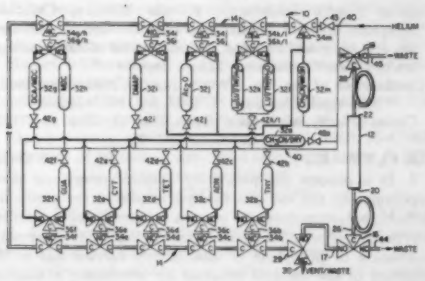
(iv) a condensate comprising the reaction product of an oligoester of the formula (I) with an unsaturated polyester at a temperature ranging from 170° to 220° C. for a period of time ranging from 3 to 7 hours.

4,483,964

REACTOR SYSTEM AND METHOD FOR POLYNUCLEOTIDE SYNTHESIS

Mickey S. Urdea, San Francisco, Calif., and Brian D. Warner, Eau Claire, Wis., assignors to Chiron Corporation, Emeryville, Calif.

Filed Jun. 20, 1983, Ser. No. 506,153
Int. Cl.³ C12M *1/00*
U.S. Cl. 525—54.11 **18 Claims**



1. A reactor system for the sequential modification of a linear polymer attached to a dispersed solid-phase support, said reactor system comprising:

a reactor zone for holding said dispersed solid-phase support, said reactor zone having at least two access ports defined by porous barriers;

a reagent manifold for selectively delivering particular reagents to the reactor zone through at least one of said porous barriers; and

means for blocking the flow of reagents to the reactor zone from the reagent manifold; and

means for inducing a continuously reversing flow of reagent through said reactor zone when the flow of reagents is blocked from the reagent manifold, whereby the reagent previously fed to the reaction zone can be agitated without recycling through the reagent manifold.

4,483,965

STRETCHED FILM

Yozo Ohba; Takashi Toyoda; Masaaki Yamanaka, all of Ibaraki; Fukashi Hashimoto, and Tetsuji Kakizaki, both of Mie, all of Japan, assignors to Mitsubishi Petrochemical Co., Ltd. and Oji Yuka Goseishi Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 195,687, Oct. 9, 1980, abandoned. This application Apr. 12, 1983, Ser. No. 484,337

Claims priority, application Japan, Oct. 9, 1979, 54-130436

Int. Cl.³ C08F *255/02*

U.S. Cl. 525—322 **13 Claims**

1. A stretched film having good writing and printing properties obtained from a film molded from a styrene-grafted polyolefin resin, by stretching the film in at least one direction, said styrene-grafted polyolefin being produced by heating an aqueous suspension containing 100 parts by weight of polyolefin resin particles, wherein the polyolefin resin is selected from polypropylene and polyethylene having a density of from 0.915 to 0.970 g/cm^2, 10 to 400 parts by weight of a styrene monomer and a radical polymerization initiator in an amount of from 0.01 to 1 part by weight per 100 parts by weight of the styrene monomer, wherein the stretched film has a BEKK index of 3,000 seconds or less as measured according to JIS-8119 (1976) and is translucent or opaque, the stretching temperature being 145° C. to 163° C. when the polyolefin resin particles are said polypropylene and the stretching temperature being 118° C. to 133° C. when said polyolefin resin particles are said polyethylene, wherein the proportion of styrene-grafted polyolefin in the styrene-grafted polyolefin resin is from 15 to 30% by weight and wherein the surface of the stretched film has no cracks and the interior of the stretched film is free of fine voids, said stretched film being free of inorganic fine powders.

4,483,966

PROCESS FOR PRODUCING MODIFIED POLYPROPYLENE

Takeshi Suzuki, Ichiharashi; Hiroshi Shimizu, Chibaken; Nobutoshi Komori, Ichiharashi; Takehiro Umeno, Ichiharashi, and Atsuyoshi Shimizu, Ichiharashi, all of Japan, assignors to Chisso Corporation, Tokyo, Japan

Continuation of Ser. No. 278,069, Jun. 29, 1981, abandoned. This application Sep. 22, 1982, Ser. No. 421,243

Claims priority, application Japan, Dec. 12, 1980, 55-175523

Int. Cl.³ C08F *297/08*

U.S. Cl. 525—323 **5 Claims**

1. In a process for producing ethylene-propylene block copolymer by the use of a catalyst employed for producing isotactic polypropylene, the process for producing a modified polypropylene which is characterized in that a gas phase polymerization of propylene is substantially carried out in the presence of the catalyst obtained by combining a titanium trichloride composition with an average particle size of 10~100μ and an organic aluminum to form the propylene polymer segment with a specific surface area more than 0.015 m^2/g at an yield of more than 3,000 g per 1 g of the titanium trichloride composition in the first step, and then a gas phase polymerization of a mixture of polypropylene and ethylene is successively carried out in the second step to form the copolymer segment with a copolymerization ratio of propylene:ethylene being 5~80 weight %:95~20 weight %, wherein the polymerized amount of the second step is 10~40% of total polymerized amount and wherein normal hexane extraction ratio (75° C., 1 hour) of the ethylene-propylene block copolymer powders obtained is 1~10 weight %.

4,483,967

METHOD OF CATALYZING OXYGEN-INITIATED FREE-RADICAL POLYMERIZATION AND CATALYSTS USED THEREIN

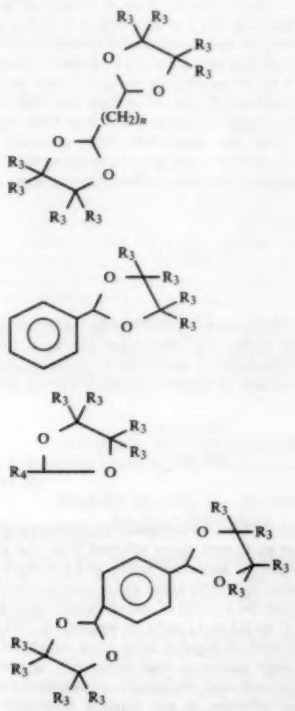
David J. Eickhoff, Crescent Park, Ky., and Medford D. Robbins, Whitewater Township, Franklin County, Ind., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 290,908, Aug. 7, 1981, Pat. No. 4,395,361. This application May 27, 1983, Ser. No. 499,045

Int. Cl.³ C08F *4/44, 267/06*

U.S. Cl. 525—370 **6 Claims**

1. A method of catalyzing an oxygen-initiated free radical polymerization reaction by exposing a resin material, capable of free radical polymerization and comprising a major portion of a low molecular weight backbone with a minor portion of mono- or disubstituted olefinic groups having a polymerization rate constant between about 10×10^{-4} and about $1{,}000\times10^{-4}$ moles^{-1} liter^{1} minute^{-1} pendant from said backbone, to oxygen in the presence of an effective amount of a catalyst consisting essentially of: (a) a compound selected from the group consisting of



and mixtures thereof, wherein each R_3 is hydrogen, methyl, or COOH; R_4 is C_1–C_{20} alkyl; and n is from about 1 to 10; and (b) a peroxide-decomposing cobalt(II) compound.

4,483,968

PROCESS FOR THE MANUFACTURE OF A CEMENTITIOUS RESIN SOLUTION

Hans-Joachim Semmler, Hochheim am Main, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 29, 1983, Ser. No. 537,346

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1982, 3236585

Int. Cl.[3] **C08F** *283/06;* **C08L** *61/10*

U.S. Cl. 525—401 **9 Claims**

1. A process for the manufacture of a cementitious resin solution for chemicals-resistant cements by dissolving a phenol-furan-formaldehyde resin or phenol-formaldehyde resin in furfuryl alcohol or preparing a cementitious phenol-furan-formaldehyde resin solution having a viscosity not exceeding 1,600 mPa.s (measured at 20° C.) by acid condensation with the use of furfuryl alcohol, which comprises adding from 0.01 to 0.1 equivalents of a primary amine selected from the group consisting of methylamine, ethylamine, propylamine, butylamine, higher fatty amines having up to 18 carbon atoms, cyclohexylamine, ethanolamine, 1-amino-2-hydroxypropane, diaminoethane, diaminopropane, 4,4-diaminodiphenylmethane, 4,4'-diaminodiphenylpropane, dipropylenetriamine, diethylenetriamine and mixtures thereof per liter to the cementitious resin solution and allowing the cementitious resin solution to react for at least 24 hours after additon of the amine.

4,483,969

EMULSIFIABLE POLYESTER WAXES

Frederick B. Joyner; Jimmy R. Trotter, and Richard L. McConnell, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 30, 1983, Ser. No. 509,551

Int. Cl.[3] **C08G** *63/76*

U.S. Cl. 525—437 **15 Claims**

1. A linear amorphous or semicrystalline emulsifiable polyester wax having an inherent viscosity of about 0.05 to about 0.39, a melt viscosity of about 10 to about 2000, cp. at 190° C. a heat of fusion of less than 28 cal./g., and a melting point less than about 100° C. prepared by reacting at least one saturated aliphatic or cycloaliphatic dibasic acid having 4 to 36 carbon atoms with at least one saturated aliphatic or cycloaliphatic glycol having 2 to 12 carbon atoms to form a substantially hydroxy-terminated nonemulsifiable linear polyester wax and subsequently reacting said polyester wax with a polyfunctional organic anhydride.

4,483,970

POLYESTER-ESTER URETHANE

Franciscus J. Huntjens, Arnhem, and Anton H. J. Brouwer, Oosterbeek, both of Netherlands, assignors to Akzo N.V., Arnhem, Netherlands

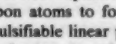
Filed Aug. 17, 1983, Ser. No. 523,955

Claims priority, application Netherlands, Aug. 17, 1982, 8203220

Int. Cl.[3] **C08G** *18/42*

U.S. Cl. 525—440 **17 Claims**

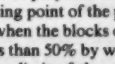
1. Polyester-ester urethane built up of polyester-ester units which are linked together by low molecular weight structural units of the formula



wherein R_1 represents a polyfunctional organic group having not more than 30 carbon atoms, and p is an integer of 2 or 3, which polyesterester units are built up of two types of polyester units containing (1) blocks comprising a multiple of ester units of the formula

and (2) blocks comprising a multiple of other ester units which form a bifunctional polyester or polyester amide having a melting point not higher than 100° C., which two types of polyester units are linked together by ester bonds, with the proviso that: at least 80 mole % of the G groups in the latter formula are tetramethylene radicals and the remaining proportion thereof are divalent radicals left after removal of hydroxyl groups from a low molecular weight diol having a molecular weight not higher than 250; at least 80 mole % of the R_2 groups are 1,4-phenylene radicals and the remaining proportion thereof are divalent radicals left after removal of carboxyl groups from a low molecular weight dicarboxylic acid having a molecular weight not higher than 300; the sum of the percentages of G groups which are not tetramethylene radicals and of the percentage of R_2 groups which are not 1,4-phenylene radicals does not exceed 20; and the ester units of the formula

form 20 to 90% by weight of the polyester-ester, characterized in that the interlinked ester units of the formula



and the other ester units interlinked to form a bifunctional polyester or polyester amide are present in an amount such that the melting point of the polyester-ester urethane is at least 150° C. and when the blocks of the second type of ester units constitutes less than 50% by weight of the total number of ester units, the upper limit of the glass transition range thereof does not exceed +20° C. and when said blocks of the second type of ester units constitute more than 50% by weight of the total number of ester units, the upper limit of the glass transition range is not higher than −5° C.

4,483,971

PROCESS FOR PRODUCING TERPOLYMERS OF PROPYLENE, ETHYLENE AND ANOTHER α-OLEFIN

Akihiro Sato, Chibaken; Takeshi Suzuki, Ichiharashi; Kazutsune Kikuta, Ichiharashi; Hiromasa Chiba, Ichiharashi; Toshihiro Uwai, Ichiharashi; Kenji Matsuda, Ichiharashi, and Tohru Hanari, Ichiharashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Continuation of Ser. No. 252,391, Apr. 9, 1981, abandoned. This application Feb. 25, 1983, Ser. No. 469,926

Claims priority, application Japan, Apr. 11, 1980, 55-47742

The portion of the term of this patent subsequent to Jan. 5, 1999, has been disclaimed.

Int. Cl.[3] **C08F** *4/64, 210/02*

U.S. Cl. 526—142 **7 Claims**

1. A process for producing terpolymers of ethylene, propylene and another alpha-olefin, which comprises

(a) preliminarily activating a catalyst consisting of a titanium trichloride composition obtained by reacting a reaction product (I) of (A_2) an organoaluminum compound with an electron donor, with $TiCl_4$ to obtain a solid product (II), which is further reacted with an electron donor and an electron acceptor and an organoaluminum halide expressed by the general formula AlR_1R_2X wherein R_1 and R_2 are the same or different alkyl, aryl or alkaryl groups and X represents a halogen atom, with an alpha-olefin of 2 to 12 carbon and a reaction product of a trialkylaluminum and an aromatic ester, and

(b) copolymerizing 1.0 to 3.5% by weight of ethylene, 88 to

means for blocking the flow of reagents to the reactor zone from the reagent manifold; and

means for inducing a continuously reversing flow of reagent through said reactor zone when the flow of reagents is blocked from the reagent manifold, whereby the reagent previously fed to the reaction zone can be agitated without recycling through the reagent manifold.

4,483,965

STRETCHED FILM

Yozo Ohba; Takashi Toyoda; Masaaki Yamanaka, all of Ibaraki; Fukashi Hashimoto, and Tetsuji Kakizaki, both of Mie, all of Japan, assignors to Mitsubishi Petrochemical Co., Ltd. and Oji Yuka Goseishi Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 195,687, Oct. 9, 1980, abandoned. This application Apr. 12, 1983, Ser. No. 484,337

Claims priority, application Japan, Oct. 9, 1979, 54-130436

Int. Cl.³ C08F *255/02*

U.S. Cl. 525—322 **13 Claims**

1. A stretched film having good writing and printing properties obtained from a film molded from a styrene-grafted polyolefin resin, by stretching the film in at least one direction, said styrene-grafted polyolefin being produced by heating an aqueous suspension containing 100 parts by weight of polyolefin resin particles, wherein the polyolefin resin is selected from polypropylene and polyethylene having a density of from 0.915 to 0.970 g/cm^2, 10 to 400 parts by weight of a styrene monomer and a radical polymerization initiator in an amount of from 0.01 to 1 part by weight per 100 parts by weight of the styrene monomer, wherein the stretched film has a BEKK index of 3,000 seconds or less as measured according to JIS-8119 (1976) and is translucent or opaque, the stretching temperature being 145° C. to 163° C. when the polyolefin resin particles are said polypropylene and the stretching temperature being 118° C. to 133° C. when said polyolefin resin particles are said polyethylene, wherein the proportion of styrene-grafted polyolefin in the styrene-grafted polyolefin resin is from 15 to 30% by weight and wherein the surface of the stretched film has no cracks and the interior of the stretched film is free of fine voids, said stretched film being free of inorganic fine powders.

4,483,966

PROCESS FOR PRODUCING MODIFIED POLYPROPYLENE

Takeshi Suzuki, Ichiharashi; Hiroshi Shimizu, Chibaken; Nobutoshi Komori, Ichiharashi; Takehiro Umeno, Ichiharashi, and Atsuyoshi Shimizu, Ichiharashi, all of Japan, assignors to Chisso Corporation, Tokyo, Japan

Continuation of Ser. No. 278,069, Jun. 29, 1981, abandoned. This application Sep. 22, 1982, Ser. No. 421,243

Claims priority, application Japan, Dec. 12, 1980, 55-175523

Int. Cl.³ C08F *297/08*

U.S. Cl. 525—323 **5 Claims**

1. In a process for producing ethylene-propylene block copolymer by the use of a catalyst employed for producing isotactic polypropylene, the process for producing a modified polypropylene which is characterized in that a gas phase polymerization of propylene is substantially carried out in the presence of the catalyst obtained by combining a titanium trichloride composition with an average particle size of 10~100μ and an organic aluminum to form the propylene polymer segment with a specific surface area more than 0.015 m^2/g at an yield of more than 3,000 g per 1 g of the titanium trichloride composition in the first step, and then a gas phase polymerization of a mixture of polypropylene and ethylene is successively carried out in the second step to form the copolymer segment with a copolymerization ratio of propylene:ethylene being 5~80 weight %:95~20 weight %, wherein the polymerized amount of the second step is 10~40% of total polymerized amount and wherein normal hexane extraction ratio (75° C., 1 hour) of the ethylene-propylene block copolymer powders obtained is 1~10 weight %.

4,483,967

METHOD OF CATALYZING OXYGEN-INITIATED FREE-RADICAL POLYMERIZATION AND CATALYSTS USED THEREIN

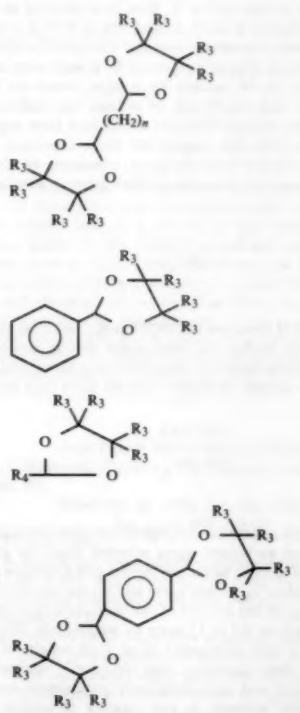
David J. Eickhoff, Crescent Park, Ky., and Medford D. Robbins, Whitewater Township, Franklin County, Ind., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 290,908, Aug. 7, 1981, Pat. No. 4,395,361. This application May 27, 1983, Ser. No. 499,045

Int. Cl.³ C08F *4/44, 267/06*

U.S. Cl. 525—370 **6 Claims**

1. A method of catalyzing an oxygen-initiated free radical polymerization reaction by exposing a resin material, capable of free radical polymerization and comprising a major portion of a low molecular weight backbone with a minor portion of mono- or disubstituted olefinic groups having a polymerization rate constant between about 10×10^{-4} and about $1{,}000\times10^{-4}$ moles^{-1} liter^{1} minute^{-1} pendant from said backbone, to oxygen in the presence of an effective amount of a catalyst consisting essentially of: (a) a compound selected from the group consisting of



and mixtures thereof, wherein each R_3 is hydrogen, methyl, or COOH; R_4 is C_1–C_{20} alkyl; and n is from about 1 to 10; and (b) a peroxide-decomposing cobalt(II) compound.

4,483,968

PROCESS FOR THE MANUFACTURE OF A CEMENTITIOUS RESIN SOLUTION

Hans-Joachim Semmler, Hochheim am Main, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 29, 1983, Ser. No. 537,346

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1982, 3236585

Int. Cl.³ C08F *283/06*; C08L *61/10*

U.S. Cl. 525—401 **9 Claims**

1. A process for the manufacture of a cementitious resin solution for chemicals-resistant cements by dissolving a phenol-furan-formaldehyde resin or phenol-formaldehyde resin in furfuryl alcohol or preparing a cementitious phenol-furan-formaldehyde resin solution having a viscosity not exceeding 1,600 mPa.s (measured at 20° C.) by acid condensation with the use of furfuryl alcohol, which comprises adding from 0.01 to 0.1 equivalents of a primary amine selected from the group consisting of methylamine, ethylamine, propylamine, butylamine, higher fatty amines having up to 18 carbon atoms, cyclohexylamine, ethanolamine, 1-amino-2-hydroxypropane, diaminoethane, diaminopropane, 4,4-diaminodiphenylmethane, 4,4'-diaminodiphenylpropane, dipropylenetriamine, diethylenetriamine and mixtures thereof per liter to the cementitious resin solution and allowing the cementitious resin solution to react for at least 24 hours after additon of the amine.

4,483,969

EMULSIFIABLE POLYESTER WAXES

Frederick B. Joyner; Jimmy R. Trotter, and Richard L. McConnell, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 30, 1983, Ser. No. 509,551

Int. Cl.³ C08G *63/76*

U.S. Cl. 525—437 **15 Claims**

1. A linear amorphous or semicrystalline emulsifiable polyester wax having an inherent viscosity of about 0.05 to about 0.39, a melt viscosity of about 10 to about 2000, cp. at 190° C. a heat of fusion of less than 28 cal./g., and a melting point less than about 100° C. prepared by reacting at least one saturated aliphatic or cycloaliphatic dibasic acid having 4 to 36 carbon atoms with at least one saturated aliphatic or cycloaliphatic glycol having 2 to 12 carbon atoms to form a substantially hydroxy-terminated nonemulsifiable linear polyester wax and subsequently reacting said polyester wax with a polyfunctional organic anhydride.

4,483,970

POLYESTER-ESTER URETHANE

Franciscus J. Huntjens, Arnhem, and Anton H. J. Brouwer, Oosterbeek, both of Netherlands, assignors to Akzo N.V., Arnhem, Netherlands

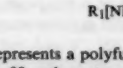
Filed Aug. 17, 1983, Ser. No. 523,955

Claims priority, application Netherlands, Aug. 17, 1982, 8203220

Int. Cl.³ C08G *18/42*

U.S. Cl. 525—440 **17 Claims**

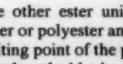
1. Polyester-ester urethane built up of polyester-ester units which are linked together by low molecular weight structural units of the formula



wherein R_1 represents a polyfunctional organic group having not more than 30 carbon atoms, and p is an integer of 2 or 3, which polyesterester units are built up of two types of polyester units containing (1) blocks comprising a multiple of ester units of the formula

and (2) blocks comprising a multiple of other ester units which form a bifunctional polyester or polyester amide having a melting point not higher than 100° C., which two types of polyester units are linked together by ester bonds, with the proviso that: at least 80 mole % of the G groups in the latter formula are tetramethylene radicals and the remaining proportion thereof are divalent radicals left after removal of hydroxyl groups from a low molecular weight diol having a molecular weight not higher than 250; at least 80 mole % of the R_2 groups are 1,4-phenylene radicals and the remaining proportion thereof are divalent radicals left after removal of carboxyl groups from a low molecular weight dicarboxylic acid having a molecular weight not higher than 300; the sum of the percentages of G groups which are not tetramethylene radicals and of the percentage of R_2 groups which are not 1,4-phenylene radicals does not exceed 20; and the ester units of the formula

form 20 to 90% by weight of the polyester-ester, characterized in that the interlinked ester units of the formula



and the other ester units interlinked to form a bifunctional polyester or polyester amide are present in an amount such that the melting point of the polyester-ester urethane is at least 150° C. and when the blocks of the second type of ester units constitutes less than 50% by weight of the total number of ester units, the upper limit of the glass transition range thereof does not exceed +20° C. and when said blocks of the second type of ester units constitute more than 50% by weight of the total number of ester units, the upper limit of the glass transition range is not higher than −5° C.

4,483,971

PROCESS FOR PRODUCING TERPOLYMERS OF PROPYLENE, ETHYLENE AND ANOTHER α-OLEFIN

Akihiro Sato, Chibaken; Takeshi Suzuki, Ichiharashi; Kazutsune Kikuta, Ichiharashi; Hiromasa Chiba, Ichiharashi; Toshihiro Uwai, Ichiharashi; Kenji Matsuda, Ichiharashi, and Tohru Hanari, Ichiharashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Continuation of Ser. No. 252,391, Apr. 9, 1981, abandoned. This application Feb. 25, 1983, Ser. No. 469,926

Claims priority, application Japan, Apr. 11, 1980, 55-47742

The portion of the term of this patent subsequent to Jan. 5, 1999, has been disclaimed.

Int. Cl.³ C08F *4/64, 210/02*

U.S. Cl. 526—142 **7 Claims**

1. A process for producing terpolymers of ethylene, propylene and another alpha-olefin, which comprises

(a) preliminarily activating a catalyst consisting of a titanium trichloride composition obtained by reacting a reaction product (I) of (A_2) an organoaluminum compound with an electron donor, with $TiCl_4$ to obtain a solid product (II), which is further reacted with an electron donor and an electron acceptor and an organoaluminum halide expressed by the general formula AlR_1R_2X wherein R_1 and R_2 are the same or different alkyl, aryl or alkaryl groups and X represents a halogen atom, with an alpha-olefin of 2 to 12 carbon and a reaction product of a trialkylaluminum and an aromatic ester, and

(b) copolymerizing 1.0 to 3.5% by weight of ethylene, 88 to

96% by weight of propylene and 1.0 to 10.0% by weight of another alpha-olefin of 4 to 12 carbon atoms based on the total weight of these monomers, in the presence of the preliminarily activated catalyst of step (a).

4,483,972

INTEGRATED CROSS-LINKERS AND AMINE FUNCTIONAL SILOXANE SCAVENGERS FOR RTV SILICONE RUBBER COMPOSITIONS

Tyrone D. Mitchell, Albany, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Feb. 1, 1983, Ser. No. 462,949
Int. Cl.³ C08G 77/06
U.S. Cl. 528—18 **29 Claims**

1. A shelf-stable, fast-curing one-component RTV silicone rubber composition comprising,

(A) an organopolysiloxane polymer having a viscosity varying in the range of 100 to 1,000,000 centipoise at 25° C. where the organo groups are monovalent hydrocarbon radicals, and wherein in said polymer, the terminal silicon atoms in the polymer chain have bonded to them at least one alkoxy group;

(B) an effective amount of a condensation catalyst; and

(C) an effective amount of a scavenging compound of the formula,

$$(R^1O)_x \underset{\underset{A_w}{|}}{\overset{\overset{R_y^2}{|}}{SiO}} \frac{4-(x+y+w)}{2}$$

where R^1 and R^2 are individually selected from C_{1-13} monovalent hydrocarbon radicals and A is a radical selected from the group consisting of simple amine radicals of the formula,

$$-\underset{\underset{R^{11}}{|}}{\overset{\overset{R^{10}}{|}}{N}}-$$

where R^{10} and R^{11} are individually selected from hydrogen C_{1-8} monovalent hydrocarbon radicals, and multiamine functional radicals of the formula,

$$-\underset{\underset{}{|}}{\overset{\overset{R^3}{|}}{N}}-R^4-\underset{\underset{}{|}}{\overset{\overset{R^6}{|}}{N}}-R^5$$

where R^3 is selected from the group consisting of hydrogen, C_{1-8} monovalent hydrocarbon radicals, and a radical of the formula

$$-R^7-\underset{\underset{}{|}}{\overset{\overset{R^9}{|}}{N}}-R^8,$$

wherein R^8 and R^9 are individually selected from the group consisting of hydrogen and C_{1-8} monovalent hydrocarbon radicals and R^7 is a C_{2-8} divalent hydrocarbon radical; R^4 is a C_{2-8} divalent hydrocarbon radical, R^5 and R^6 are individually selected from the group consisting of hydrogen and C_{1-8} monovalent hydrocarbon radicals; x varies in the range of 0.00 to 2.50; y varies in the range of 0.00 to 2.50; and w varies in the range of 0.05 to 1.5; and the sum of x+y+w varies in the range of 2.10 to 3.00.

4,483,973

ADHESION PROMOTERS FOR ONE-COMPONENT RTV SILICONE COMPOSITIONS

Gary M. Lucas, Scotia, and John J. Dziark, Ballston Spa, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Feb. 17, 1982, Ser. No. 349,538
Int. Cl.³ C08G 77/06
U.S. Cl. 528—21 **12 Claims**

1. A stable, one-package, substantially anhydrous and substantially acid-free, room temperature vulcanizable organopolysiloxane composition stable under ambient conditions in the substantial absence of moisture over an extended period of time and convertible to a tack-free elastomer comprising:

(1) an organopolysiloxane wherein the silicon atom at each polymer chain end is terminated with at least two alkoxy radicals;

(2) an effective amount of a condensation catalyst;

(3) a stabilizing amount of scavenger for hydroxy functional groups;

(4) an effective amount of a curing accelerator selected from the group consisting of substituted guanidines, amines and mixtures thereof; and

(5) an effective amount of an adhesion promoter having the formula

$$(R^{10}O)_{3-t}-\underset{\underset{}{|}}{\overset{\overset{R_t^{11}}{|}}{Si}}-Z$$

where R^{10} and R^{11} are C_{1-8} monovalent hydrocarbon radicals, t varies from 0 to 3, and Z is a saturated, unsaturated or aromatic hydrocarbon radical, said radical being further functionalized by a member selected from the group consisting of amino, ether, epoxy, isocyanato, cyano, isocyanurate, acryloxy and acyloxy and mixtures thereof.

4,483,974

PROCESS FOR THE PRODUCTION OF STABILIZED POLYISOCYANATES, THE POLYISOCYANATES SO-STABILIZED AND THEIR USE IN THE PRODUCTION OF POLYURETHANES

Gerhard Grögler; Heinrich Hess, both of Leverkusen, and Richard Kopp, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 18, 1983, Ser. No. 514,410
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1982, 3230757
Int. Cl.³ C08G 18/32, 18/48, 18/14
U.S. Cl. 528—68 **52 Claims**

1. A process for the production of solid polyisocyanates stabilized by a polymer coating and showing retarded reactivity comprising reacting

(1) one or more solid polyisocyanates in particulate form, said polyisocyanates having melting points above 30° C., and

(2) from 0.1 to 25 equivalent percent of amine per isocyanate equivalent of a compound having a molecular weight of from 32 to 6000, said compound being selected from the group consisting of

(a) organic compounds containing one or more terminal —CO—NH—NH_2 groups,

(b) hydrazines, and

(c) mixtures thereof,

said reaction being conducted at a temperature below the melting temperature of said solid polyisocyanate, and being conducted in the presence of

(3) a liquid medium selected from the group consisting of

(a) organic compounds containing one or more hydroxy groups and having molecular weights of from 62 to 6000,

(b) organic compounds containing 2 or more aromatical-

ly-bound amino groups and having molecular weights of from 108 to 6000,

(c) organic compounds containing 2 or more aliphatically-bound amino groups and having molecular weights of from 400 to 6000,

(d) plasticizers,

(e) water, and

(f) mixtures thereof

to form a suspension of polyadduct-coated, stabilized polyisocyanate in the liquid medium.

4,483,975

COPOLYETHERESTERAMIDES, PROCESS FOR THEIR PRODUCTION AND THEIR USE FOR THE HEAT-SEALING OF TEXTILES

Eduard de Jong, Troisdorf-Eschmar; Karl-Heinz Hapelt, Bonn, and Helmut Knipf, Mechernich, all of Fed. Rep. of Germany, assignors to Plate Bonn Gesellschaft mit beschrankter Haftung, Bonn, Fed. Rep. of Germany

Filed Dec. 21, 1983, Ser. No. 564,085

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1982, 3247755

Int. Cl.³ C08G *63/44, 69/00, 69/44*

U.S. Cl. 528—288 **8 Claims**

1. Copolyetheresteramides comprising, incorporated by polycondensation,

I. from 65 to 90% by weight of a polyamide-forming component which includes:

(a) 20 to 40% by weight of caprolactam and/or ε-aminocaproic acid,

(b) 10 to 30% by weight of an equimolecular mixture of adipic acid and primary aliphatic and/or cycloaliphatic C_6 to C_{25} diamines,

(c) 10 to 30% by weight of an equimolecular mixture of azelaic and/or sebacic acid and primary aliphatic and-/or cycloaliphatic C_6 to C_{25} diamines, and

(d) 20 to 40% by weight of an equimolecular mixture of decanedicarboxylic and/or brassylic acid and primary aliphatic and/or cycloaliphatic C_6 to C_{25} diamines, and

II. 10 to 35% by weight of a polyetherester-forming component which includes equimolecular quantities of saturated aliphatic linea. dicarboxylic acids, having 6 to 13 C-atoms, and poly(alkylene oxide diols).

3. Process for the preparation of copolyetheresteramides comprising submitting to polycondensation

I. 65 to 90% by weight amide-forming components which include:

(a) 20 to 40% by weight of caprolactam and/or ε-aminocaproic acid,

(b) 10 to 30% by weight of an equimolecular mixture of adipic acid and primary aliphatic and/or cycloaliphatic C_6 to C_{25} diamines,

(c) 10 to 30% by weight of an equimolecular mixture of azelaic and/or sebacic acid and primary aliphatic and-/or cycloaliphatic C_6 to C_{25} diamines, and

(d) 20 to 40% by weight of an equimolecular mixture of decanedicarboxylic and/or brassylic acid and primary aliphatic and/or cycloaliphatic C_6 to C_{25} diamines, and

II. 10 to 35% by weight polyetherester-forming component including equimolecular quantities of saturated aliphatic linear dicarboxylic acids having 6 to 13 C-atoms and poly(alkylene oxide diols).

4,483,976

POLYESTER BINDER FIBERS

Tamio Yamamoto, and Hiroshi Tamaya, both of Matsuyama, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Aug. 17, 1983, Ser. No. 524,000

Claims priority, application Japan, Feb. 1, 1983, 58-13743

Int. Cl.³ C08G *63/68*

U.S. Cl. 528—295 **4 Claims**

1. Polyester binder fibers consisting of a copolymerized polyester comprising at least one dicarboxylic acid and/or an esterforming derivative thereof, a glycol and an ester-forming sulfonic acid alkali metal salt composition, wherein the total glycol component contained in said polyester contains from 5 mole percent to 20 mole percent of a composition represented by the formula $H—(OCH_2CH_2)_nOH$, wherein n is an integer of from 2 to 13 and wherein the binder fibers have a birefringence of less than 0.10.

4,483,977

HIGH MOLECULAR WEIGHT POLYBENZIMIDAZOLES

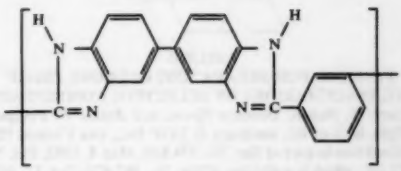
Anthony B. Conciatori, Chatham; Eui W. Choe, Randolph, both of N.J., and Henry K. Hall, Jr., Tucson, Ariz., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 381,285, May 24, 1982, Pat. No. 4,414,383. This application Jun. 21, 1983, Ser. No. 506,544

Int. Cl.³ C08G *73/18*

U.S. Cl. 528—342 **1 Claim**

1. Polybenzimidazole comprising poly-2,2'-(m-phenylene)-5,5'-bibenzimidazole which is characterized by the recurring unit:



where the polybenzimidazole exhibits properties comprising an Inherent Viscosity of at least about 0.7 dl/g when measured at a concentration of 0.4 g of said polybenzimidazole in 100 ml of 97 percent sulfuric acid at 25° C.; a Weight Average Molecular Weight of at least about 100,000; a Plugging Value of greater than about 0.5; A Gardner Color of less than about 10; and which polybenzimidazole when heated with dimethylacetamide solvent at 240° C. for two hours forms at least a 15 weight percent solution in said dimethylacetamide at the 240° C. temperature.

4,483,978

ENERGETIC COPOLYMERS AND METHOD OF MAKING SAME

Gerald E. Manser, Cupertino, Calif., assignor to S R I International, Menlo Park, Calif.

Continuation-in-part of Ser. No. 262,935, May 12, 1981, Pat. No. 4,393,199. This application May 18, 1982, Ser. No. 379,354

Int. Cl.³ C08G *65/22*

U.S. Cl. 528—408 **10 Claims**

8. A copolymer comprising a chain of mer units resulting from the ring opening of a Monomer I which is a cyclic oxide containing two to five carbon atoms in the oxide ring and which contains also a pendant energetic group which decomposes without combustion at a temperature of about 180° C. to 230° C. and in so doing releases gas and (2) mer units resulting from the ring opening of a Monomer II which is a cyclic oxide containing two to five carbon atoms in the oxide ring, Monomer II differing from Monomer II; Monomer I, which homopolymerized, resulting in a polymer which is crystalline or viscous, the mer units derived from Monomer II being present in proportions sufficient that the copolymer has substantially diminished crystallinity or viscosity

4,483,979

POLAR SOLVENT EXTRACTION OF COLORED MATERIALS FROM ALKYLSACCHARIDES UNDER ESSENTIALLY ANHYDROUS CONDITIONS

Mark H. K. Mao, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 8, 1982, Ser. No. 447,902

Int. Cl.³ C07H *1/00*

U.S. Cl. 536—18.6 **21 Claims**

1. The process of removing colored materials which result from the preparation of alkyl saccharides by reacting an alcohol selected from the group consisting of aliphatic, aromatic and mixed aliphatic and aromatic alcohols containing from about 8 to about 24 carbon atoms with a 5- or 6-membered reducing saccharide or source thereof in the presence of an acid catalyst from said alkyl saccharides comprising extracting the colored materials with a polar solvent having a polarity of from about 1 to about 4, and a boiling point of from about 30° C. to about 200° C., the amount of polar solvent being from about 50% to about 1000% of said alkyl saccharides, and said solvent containing less than about 2% water.

4,483,980

PROCESS FOR SEPARATING GLUCOSE FROM POLYSACCHARIDES BY SELECTIVE ADSORPTION

Richard W. Neuzil, Downers Grove, and James W. Priegnitz, Elgin, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 374,819, May 4, 1982, Pat. No. 4,442,285, which is a division of Ser. No. 197,874, Oct. 17, 1980, Pat. No. 4,349,668, which is a continuation-in-part of Ser. No. 690,769, May 27, 1976, abandoned. This application Sep. 14, 1983, Ser. No. 532,248

Int. Cl.³ C07H *1/06*

U.S. Cl. 536—127 **7 Claims**

1. A process for the recovery of glucose from a mixture thereof with polysaccharides which comprises contacting in liquid phase an aqueous mixture containing glucose and polysaccharides, at a temperature in the range of from 20° to 200° C. and at a pressure sufficient to maintain a liquid phase throughout separation, with an X zeolite containing potassium cations at exchangeable cationic sites and selectively adsorbing glucose in said zeolite, removing said polysaccharides from said zeolite, and thereafter recovering the adsorbed glucose from the zeolite by means of a desorbent liquid at a temperature in the range of from 20° to 200° C. and at a pressure sufficient to maintain a liquid phase throughout separation.

4,483,981

CEPHALOSPORANIC ACID DERIVATIVES

René Heymes, Romainville, France, assignor to Roussel Uclaf, Paris, France

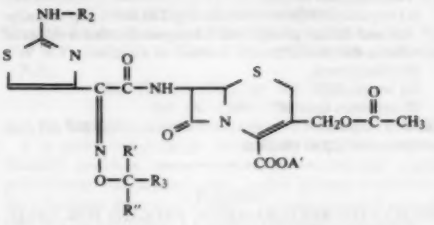
Division of Ser. No. 469,710, Feb. 25, 1983, , which is a division of Ser. No. 260,311, May 4, 1981, Pat. No. 4,386,210, which is a division of Ser. No. 886,421, Mar. 14, 1978, Pat. No. 4,288,434. This application Jan. 30, 1984, Ser. No. 574,876

Claims priority, application France, Mar. 25, 1977, 77 08988; Dec. 5, 1977, 77 36512

Int. Cl.³ C07D *501/34*

U.S. Cl. 544—28 **12 Claims**

1. A syn isomer of 7-amino-thiazolyl-acetamido-3-acetoxymethyl cephalosporanic acid compounds of the formula



I'

wherein R_2 is selected from the group consisting of chloroacetyl and groups easily removable by acid hydrolysis or hydrogenolysis, R' and R'' are individually selected from the group consisting of hydrogen and alkyl of 1 to 3 carbon atom atoms, R_3 is selected from the group consisting of —CN, $—CONH_2$ and $—COOR_1''$ and R_1'' is alkyl of 1 to 3 carbon atoms or an ester group easily removable by acid hydrolysis or hydrogenolysis and A' is hydrogen or an ester group easily removable by acid hydrolysis or hydrogenolysis.

4,483,982

PROCESSES FOR PREPARING PIROXICAM AND INTERMEDIATES LEADING THERETO

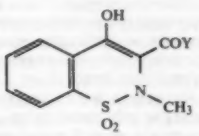
Paul D. Weeks, Gales Ferry, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 413,036, Sep. 2, 1982, , Continuation-in-part of Ser. No. 308,746, Oct. 5, 1981, Pat. No. 4,376,204. This application Apr. 5, 1984, Ser. No. 596,568

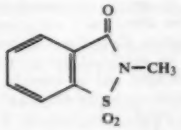
Int. Cl.³ C07D *279/02*

U.S. Cl. 544—49 **16 Claims**

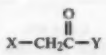
1. A process for preparing a compound selected from those of the formula



wherein Y is selected from the group consisting of alkoxy having from one to four carbon atoms, 2-methoxyethoxy and 2-pyridylimino which comprises reacting a compound of the formula



with a compound selected from those of the formula



wherein X is selected from the group consisting of chloro, bromo and iodo in a polar, reaction-inert solvent in the presence of a base selected from the group consisting of at least two equivalents of a metal hydride, at least two equivalents of an alkali metal alkoxide having one to four carbon atoms, at least two equivalents of potassium hexamethyl disilazane and at least two equivalents of potassium diisopropylamine at a tem-

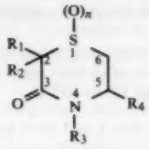
perature of from about 25° to about 70° C. until the reaction is substantially complete.

4,483,983
SUBSTITUTED DERIVATIVES OF THIAMORPHOLINONE

Gérard Lang, Epinay Sur Seine; Jean Maignan, Tremblay Les Gonesse; Jean-Luc Leveque, Paris, and Laurent Rasseneur, Thorigny, all of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Filed Apr. 13, 1983, Ser. No. 484,605
Claims priority, application France, Apr. 15, 1982, 82 06498
Int. Cl.³ C07D *279/12;* **A61K** *7/40, 31/54*
U.S. Cl. 544—58.2 **5 Claims**

1. A substituted derivative of thiamorpholinone having the formula



(I)

wherein

n is 0 or 1,

R_1 and R_2, each independently, represents hydrogen or lower alkyl having 1–4 carbon atoms, and

R_3 represents hydrogen, mono- or polyhydroxyalkyl having 2–16 carbon atoms, carbamylalkyl, carboxyalkyl or alkoxycarbonylalkyl wherein the alkyl moieties, branched or straight chain, have 1–17 carbon atoms and the alkoxy moiety has 1–3 carbon atoms,

(i) when R_3 represents hydrogen, R_4 represents $—CO_2R_5$ wherein R_5 represents alkyl having 3–18 carbon atoms, or a mono- or polyhydroxyalkyl having 2–18 carbon atoms,

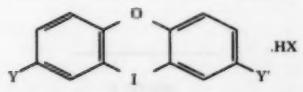
(ii) when R_3 represents mono- or polyhydroxy alkyl, carbamyl alkyl, carboxy alkyl or alkoxycarbonyl alkyl, R_4 represents hydrogen or lower alkyl having 1–4 carbon atoms.

4,483,984
PHENOXIODININ-5-IUM ANTIMICROBIAL COMPOUNDS

Edward E. Flagg, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 358,148, Mar. 15, 1982, Pat. No. 4,440,943. This application Dec. 15, 1983, Ser. No. 561,847
Int. Cl.³ C07D *413/06, 413/12*
U.S. Cl. 544—85 **4 Claims**

1. A compound corresponding to the formula:



wherein X is an anion, and Y and Y' each independently represent:

(a) alkyl;

(b)

(c)

wherein R represents alkyl;

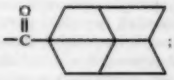
(d)

wherein R represents alkyl;

(e)

wherein R and R' are each independently alkyl, and m is an integer of from one to six, both inclusive;

(f) adamantanoyl, i.e.,



;

(g)

wherein T represents:

(1) N-alkyl-substituted pyrazine,

(2) N,N-dialkyl-substituted pyrazine, or

(3) phenylalkylether;

(h)

wherein Q represents:

(1) halo,

(2) mono or dialkyl-substituted amino, or

(3)

wherein Z represents the atoms completing a morpholino, piperidino, piperazino, or N-alkyl-piperazino group;

provided that at least one of Y and Y' represents:

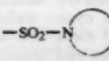
(i)

wherein T represents:

(1) N-alkyl-substituted pyrazine, or

(2) N,N-dialkyl-substituted pyrazine; or

(j)



wherein Z represents the atoms completing a morpholino, piperidino, piperazino, or N-alkyl-piperazino group.

4,483,985

PRODUCTION OF 1,4-DIHYDROPYRIDINECARBOXYLIC ACIDS

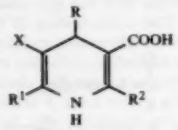
Egbert Wehinger, Velbert, and Friedrich Bossert, Wuppertal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 84,338, Oct. 12, 1979, Pat. No. 4,285,955. This application Jan. 19, 1981, Ser. No. 226,286

Int. Cl.[3] **C07D** *279/10, 213/22, 217/02, 211/68*

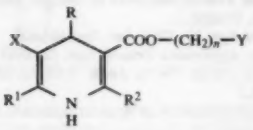
U.S. Cl. 544—131 **10 Claims**

1. A process for the production of 1,4-dihydropyridinecarboxylic acid of the formula



(I)

or its salt,
in which
R is an aryl radical or a heterocyclic radical selected from thienyl, furyl, pyrryl, pyrazolyl, imidazolyl, oxazolyl, isoxazolyl, thiazolyl, pyridyl, pyridazinyl, pyrimidyl, pyrazinyl, quinolyl, isoquinolyl, indolyl, benzimidazolyl, quinazolyl and quinoxalyl, in which the aryl radical or the heterocyclic radical optionally contains 1 to 3 identical or different substituents selected from phenyl, alkyl, alkenyl, alkinyl, alkoxy, halogen, trifluoromethyl, trifluoromethoxy, alkylamino, nitro, cyano, azido, carboxamido, sulphonamido and SO_m—alkyl (in which m is 0, 1 or 2)
R^1 and R^2 are identical or different and denote a hydrogen atom, a straight-chain or branched alkyl radical, an aryl radical or an aralkyl radical and
X (a) is a —COOH group or
(b) is a group of the formula —COR^3,
in which
R^3 is an optionally substituted alkyl, aryl, aralkyl, amino, monoalkylamino or dialkylamino group,
or
(c) is a group of the formula —$COOR^4$
in which
R^4 is a straight-chain, branched or cyclic, saturated or unsaturated hydrocarbon radical which is optionally interrupted by an oxygen or a sulphur atom or by an —SO— or —SO_2—group in the chain, and/or which is optionally substituted by one halogen or by 1 or 2 trifluoromethyl groups or by one phenyl, phenoxy, phenylthio or phenylsulphonyl group, which in turn is optionally substituted by halogen, cyano, dialkylamino, alkoxy, alkyl, trifluoromethyl or nitro, or in which the hydrocarbon radical is optionally substituted by pyridyl or amino, these amino groups carrying two identical or different substituents selected from alkyl, alkoxyalkyl, aryl and aralkyl, and these substituents optionally form, with the nitrogen atom, a 5- to 7-membered ring which optionally contains an oxygen or sulphur atom or the N-alkyl grouping as a further hetero-atom, or
(d) is a group of the formula —$S(O)_r$—R^5
in which
r_5 is 0, 1 or 2 and
R^5 denotes a straight-chain, branched or cyclic saturated or unsaturated aliphatic hydrocarbon radical, optionally interrupted by an oxygen atom in the chain and/or which is optionally substituted by amino or an aryl radical selected from phenyl, phenoxy, phenylthio, phenylsulphonyl, and pyridinyl, the aryl radicals being optionally substituted by halogen, cyano, dialkylamino, alkoxy, alkyl, trifluoromethyl and nitro, and the amino group being optionally substituted by 2 identical or different substituents selected from alkyl, alkoxyalkyl, aryl or aralkyl, these substituents optionally form, with the nitrogen atom, a 5- to 7-membered ring which optionally contains an oxygen or sulphur atom or the N-alkyl grouping as a further hetero-atom,
or in which
R^5 is an aryl radical which optionally contains 1 to 3 identical or different substituents selected from alkyl, alkoxy, halogen, cyano, trifluoromethyl, trifluoromethoxy, dialkylamino and nitro, which comprises hydrolyzing a 1,4-dihydropyridine derivative of the formula



(II)

in which
R, R^1, R^2 and X have the above-mentioned meaning,
n is 1, 2, 3 or 4 and
Y denotes an electron-attracting group under alkaline conditions in the presence of an inert organic solvent in a temperature range from 10° to 100° C.

4,483,986

4-NITROBENZOPHENONE COMPOUNDS

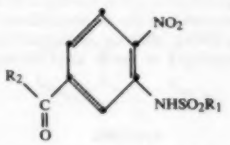
Samuel J. Dominianni, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed May 3, 1982, Ser. No. 373,945

Int. Cl.[3] **C07D** *295/16*

U.S. Cl. 544—159 **4 Claims**

1. A compound of the formula I



I

wherein
R_1 is C_1–C_5 alkyl, C_3–C_7 cycloalkyl, phenyl, furyl, thienyl, thiazol-2-yl, 1,3,4-thiadiazol-2-yl, 2-methyl-1,3,4-thiadiazol-5-yl, or R_4R_5N—, wherein R_4 and R_5 are independently C_1–C_3 alkyl or R_4 and R_5 when taken together with the nitrogen atom to which they are attached, are pyrrolidino, piperidino or morpholino; and
R_2 is phenyl or phenyl substituted by C_1–C_4 alkyl, C_1–C_4 alkoxy, chloro, bromo, iodo, or trifluoromethyl.

4,483,987

8-SUBSTITUTED 7-PHENYL-1,2,4-TRIAZOLO[2,3-c]PYRIMIDINES-5-AMINES AND AMIDES

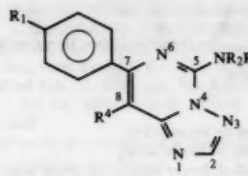
Hans Wagner, Skokie, Ill., assignor to G. D. Searle & Co., Skokie, Ill.

Filed Jun. 20, 1983, Ser. No. 506,157

Int. Cl.[3] **C07D** *487/04*

U.S. Cl. 544—263 **28 Claims**

1. A compound of the formula



wherein

R_1 is:

(a) hydrogen;

(b) halogen; or

(c) alkoxy having from 1 to 6 carbon atoms, inclusive, with the proviso that R_1 is hydrogen only when R_4 is alkanoyloxyalkyl, benzoyloxyalkyl, adamantanecarbonyloxyalkyl, hydroxyalkyl or bromoalkyl;

wherein

R_2 or R_3 are:

(a) hydrogen;

(b) alkanoyl having from 1 to 6 carbon atoms inclusive; or

(c) alkyl having from 1 to 6 carbon atoms, inclusive; R_2 and R_3 each being the same or different;

wherein

R_4 is:

(a) alkanoyloxyalkyl, the alkanoyl portion optionally being substituted by a carboxyl group on the terminal carbon and having from 1 to 10 carbon atoms, inclusive and the alkyl portion having from 1 to 4 carbon atoms inclusive;

(b) benzoyloxyalkyl, the alkyl group having from 1 to 4 carbon atoms, inclusive, wherein the benzoyl group may optionally be substituted by 1 or 2 halo groups,

(c) adamantanecarbonyloxyalkyl, the alkyl portion having from 1 to 4 carbon atoms, inclusive;

(d) hydroxyalkyl having from 1 to 4 carbon atoms, inclusive;

(e) bromoalkyl having from 1 to 4 carbon atoms, inclusive;

(f) hydrogen;

(g) alkyl having from 1 to 4 carbon atoms, inclusive;

(h) alkoxyalkyl having from 2 to 4 carbon atoms, inclusive;

(i) alkenyl having from 2 to 4 carbon atoms, inclusive; or

(j) alkynyl having from 2 to 4 carbon atoms, inclusive; or

(k) alkylthioalkyl the alkyl portions each having from 1 to 4 carbon atoms, inclusive.

4,483,988

SUBSTITUTED DERIVATIVES OF 4-T-ALKOXYCARBONYL-PIPERAZIN-2-ONES

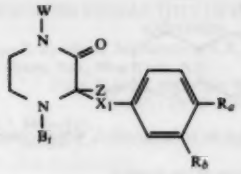
Albert A. Carr; Robert A. Farr, and John M. Kane, all of Cincinnati, Ohio, assignors to Richardson Merrell Inc., Cincinnati, Ohio

Division of Ser. No. 130,431, Mar. 14, 1980, Pat. No. 4,341,698, which is a continuation-in-part of Ser. No. 50,950, Jun. 21, 1979, abandoned. This application Jul. 19, 1982, Ser. No. 399,554

Int. Cl.³ C07D *241/08*

U.S. Cl. 544—384 **6 Claims**

1. A compound of the formula



wherein W is CH_2COOH, CH_2COOR or hydrogen, R is straight or branched chain lower alkyl having from 1 to 4 carbon atoms, Z is hydrogen or straight chain lower alkyl having from 1 to 4 carbon atoms and X_1 is methylene, carbonyl, hydroxymethylene, thio, blocked carbonyl, wherein blocked carbonyl is selected from the group consisting of C_{2-3} alkylene ketal and C_{1-4} dialkyl hydrazone, or blocked hydroxymethylene, wherein the hydroxy blocking group is selected from the group consisting of benzyl, methyl, tertiary butoxy carbonyl, C_{1-4} trialkylsilyl, methoxymethyl, (2-methoxyethoxy)methyl and tetrahydropyranyl, sulfinyl or sulfonyl, with the proviso that when X is sulfinyl or sulfonyl, Z is other than H, or X_1 and Z, taken together, are methylidenyl, R_a is hydrogen, halogen or protected hydroxy and R_b is hydrogen or R_a and R_b are protected hydroxy, wherein protected hydroxy comprises a hydroxy moiety blocked by a hydroxy blocking group selected from the group defined above, and B_f is a C_{4-5} tertiary-alkoxycarbonyl blocking group, with the proviso that when W is hydrogen and X_1 is methylene, R_a is halogen and with the additional proviso that when W is hydrogen and X_1 and Z, taken together, are methylidenyl, R_a is other than hydrogen.

4,483,989

SYNTHESIS OF PYRIDO[4,3-b]CARBAZOLE DERIVATIVES

Jean-Bernard Le Pecq; Claude Paoletti, both of Paris, and Nguyen Dat-Xuong, Antony, all of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly-sur-Seine, France

Division of Ser. No. 942,793, Sep. 15, 1978, Pat. No. 4,310,667, which is a continuation-in-part of Ser. No. 679,357, Apr. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 518,875, Oct. 29, 1974, Pat. No. 4,045,565. This application Sep. 30, 1981, Ser. No. 307,296

Claims priority, application France, Oct. 29, 1973, 73 38416

Int. Cl.³ C07D *471/02*

U.S. Cl. 546—70 **11 Claims**

1. In a process for the synthesis of a pyrido[4,3-b]carbazole from a 6-methoxycarbazole, which includes the formation by formylation of a 3-formyl-carbazole and the formation by cyclization of a pyrido[4,3-b]carbazole, the improvement comprising:

the preparation of a 9-hydroxy-pyrido[4,3-b]carbazole by; demethylating said 6-methoxy-carbazole thereby forming a 6-hydroxy-carbazole; benzoylating said 6-hydroxycarbazole thereby forming a 6-benzoyl-carbazole; and thereafter formylating said 6-benzoyl-carbazole in the 3-position and subjecting 3-formyl-6-benzoylcarbazole to cyclization conditions thereby forming 9-benzoyl-pyrido[4,3-b] carbazole.

4,483,990

PREPARATION OF DIKETONES

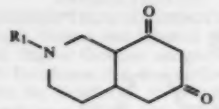
David L. Coffen, Glen Ridge, N.J., assignor to Hoffman-La Roche Inc., Nutley, N.J.

Filed Mar. 29, 1982, Ser. No. 363,333

Int. Cl.³ C07D *217/04*

U.S. Cl. 546—149 **3 Claims**

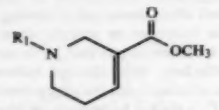
1. Process for the preparation of a bicyclic diketone of the formula



I

wherein R_1 is lower alkyl or ar-lower alkyl, which comprises the steps of

(a) reacting a compound of the formula



II

wherein R_1 is as previously described, with a compound of the formula

III

wherein R_2 is lower alkyl, in the presence of an alkali metal alkoxide; and

(b) treating sequentially the reaction mixture of step (a) with a base and then with an acid to yield a compound of formula I.

4,483,991

HYPOTENSIVE AGENTS

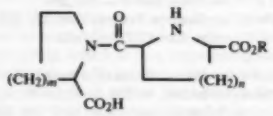
Meier E. Freed, Paoli, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Jan. 17, 1983, Ser. No. 458,376

Int. Cl.³ C07D *211/40, 207/08*

U.S. Cl. 546—189 **6 Claims**

1. A compound of the formula:



wherein

R is alkyl of 1 to 6 carbon atoms or aralkyl of 7 to 9 carbon atoms, and

m and n are, independently, one of the integers 1 or 2, or a pharmaceutically acceptable salt thereof.

4,483,992

ALKYLTHIO SUBSTITUTED PHENOXY ALKANOIC ACID ESTERS

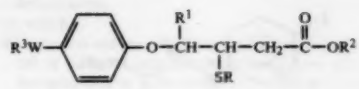
Gustave K. Kohn, Palo Alto, and Joe T. Bamberg, Redwood City, both of Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 405,853, Aug. 6, 1982,. This application Aug. 10, 1982, Ser. No. 406,791

Int. Cl.³ C07D *213/64;* **A01N** *43/40*

U.S. Cl. 546—302 **7 Claims**

1. A compound of the following formula (A):



(A)

wherein,

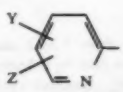
R is hydrogen or lower alkyl;

R^1 is hydrogen or lower alkyl;

R^2 is lower alkyl, lower alkenyl or lower alkynyl;

W is oxygen; and

R^3 is



in which,

each of Y and Z is independently selected from hydrogen, lower haloalkyl, bromo, chloro and fluoro.

4,483,993

PRODUCTION OF POLYCHLORINATED PYRIDINE MIXTURES BY LIQUID PHASE CHLORINATION OF BETA-PICOLINE OR BETA-PICOLINE HYDROCHLORIDE

Michael J. Marinak, Kelso, and John L. Simonson, Longview, both of Wash., assignors to Kalama Chemical, Inc., Kalama, Wash.

Continuation-in-part of Ser. No. 483,183, Apr. 8, 1983,. This application Sep. 6, 1983, Ser. No. 529,603

Int. Cl.³ C07D *211/72, 211/84, 213/61*

U.S. Cl. 546—345 **37 Claims**

1. The process of producing high yields of mixtures rich in chlorinated picolines/pyridines by non-catalytically chlorinating beta-picoline or beta-picoline hydrochloride in the liquid phase without substantial formation of intractable nonvolatiles, said process comprising:

(a) establishing in a reactor means an anhydrous diluent reactor charge which is made up of chlorinated pyridine and/or picoline compounds, said diluent being essentially nonreactive with chlorine in the sense of forming one mole or less of hydrogen chloride per mole of diluent under the reaction conditions to which the reactants in the reactor means are subjected;

(b) while maintaining the reactor charge in the liquid phase and at a temperature of at least about 190° C. to about 260° C., sparging chlorine and beta-picoline or beta-picoline hydrochloride into the reactor charge near the bottom thereof at a chlorine-to-picoline feed ratio of at least about 5:1 by weight and at a feed rate low enough so that any separation of the reactor charge into a second, lighter phase composed of unchlorinated beta-picoline hydrochloride is minimized and is in any event less than about 10% of the reactor charge by volume, the excess of chlorine being fed to the reactor charge relative to the amount of beta-picoline being fed thereto providing enhanced agitation of the reaction mass and sufficient chlorine to ensure that the chlorine partial pressure in the vapor space over the reactor charge is greater than 50%, such reaction conditions being maintained until substantial side-chain and nuclear substitution of chlorine in the beta-picoline or beta-picoline hydrochloride has occurred; and

(c) continuing chlorine addition and maintaining the reaction mass in the liquid phase at a temperature of at least about 190° C. in a finishing reactor means until the desired extent of side-chain and nuclear substitution of chlorine in the beta-picoline or beta-picoline hydrochloride has occurred.

4,483,994

PROCESS FOR THE PRODUCTION OF ALKYLENE CARBONATES AND OXIDES

Stephen E. Jacobson, Morristown, N.J., assignor to The Halcon SD Group, Inc., New York, N.Y.

Filed Feb. 22, 1983, Ser. No. 468,428
Int. Cl.³ C07D 317/36, 317/38
U.S. Cl. 549—230 12 Claims

1. A process for the preparation of alkylene carbonates, from a halogen-free reaction, comprising:

reacting the corresponding olefins with a thallic oxide and a weak acid or, a weak acid thallic salt, together with carbon dioxide in an aqueous, organic solvent medium;

separating the formed alkylene carbonates from the reaction medium.

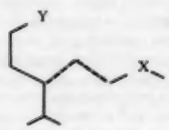
4,483,995

PROCESS FOR PRODUCING SOLANONE, NORSOLANADIONE AND INTERMEDIATES THEREFOR

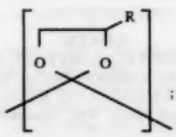
Kenneth K. Light, North Ogden, Utah; William L. Schreiber, Jackson, N.J.; Joseph A. McGhie, Montclair, N.J.; Ronald P. Schreck, Old Bridge, N.J.; Takao Yoshida, West Long Branch, N.J.; Loren B. Schreiber, Aberdeen, N.J., and Ranya Muralidhara, Fair Haven, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 357,158, Mar. 11, 1982, Pat. No. 4,412,083.
This application Jul. 8, 1983, Ser. No. 511,966
Int. Cl.³ C07D 317/00
U.S. Cl. 549—451 8 Claims

1. At least one compound defined according to the structure:

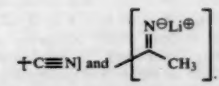


wherein one of the dashed lines is a carbon-carbon double bond and the other of the dashed lines is a carbon-carbon single bond; wherein X represents the structure:



;

wherein R represents hydrogen or methyl; wherein Y represents a moiety selected from the group consisting of:



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4,483,996

PROCESS FOR PRODUCTION OF OLEFIN OXIDES AND KETONES

Stephen E. Jacobson, Morristown, N.J., assignor to The Halcon SD Group, Inc., New York, N.Y.

Filed Feb. 22, 1983, Ser. No. 468,427
Int. Cl.³ C07D 301/03
U.S. Cl. 549—524 21 Claims

1. A process for converting an olefin to its corresponding olefin oxide comprising:

reacting a mixture of the olefin, carbon dioxide, a thallic compound and water in a substantially organic solvent-free, acid-free reaction zone to form the olefin oxide and a thallous compound;

separating and collecting the formed olefin oxide product from the reaction mixture.

4,483,997

OLEFIN EPOXIDATION WITH INORGANIC METAL PHOSPHATE ENHANCED CATALYST

Edward E. McEntire, and Robert M. Gipson, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jan. 31, 1983, Ser. No. 462,250
Int. Cl.³ C07D 301/19
U.S. Cl. 549—529 13 Claims

1. A method for the preparation of an epoxide comprising the step of reacting an olefin selected from the group consisting of 1-butylene, propylene, alpha and internal olefins having from 5 to 20 carbon atoms, with a hydroperoxide in the presence of a catalyst; said catalyst comprising molybdenum and/or tungsten, and an inorganic metal phosphate and/or arsenate wherein at least said inorganic metal phosphate and/or arsenate is substantially insoluble in the olefin-hydroperoxide reaction mixture, and said metal portion of said inorganic metal phosphate and/or arsenate is selected from the group consisting of aluminum, zinc, and mixtures of these metals.

4,483,998

SIMULTANEOUS EPOXIDE AND CARBOXYLIC ACID MANUFACTURE BY CO-OXIDATION IN THE PRESENCE OF A COPPER-BORON-SILVER CATALYST

John R. Sanderson; Edward T. Marquis, both of Austin, and Jiang-Jen Lin, Round Rock, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Apr. 11, 1983, Ser. No. 484,058
Int. Cl.³ C07D 301/06
U.S. Cl. 549—533 6 Claims

1. A process for simultaneously producing an epoxide and a carboxylic acid comprising

passing oxygen through a mixture of an olefin of the formula R—CH=CH—R′, where R is an alkyl group from one to twenty carbon atoms and R′ is hydrogen or an alkyl group of from one to nineteen carbon atoms and where R and R′ are linked together, the olefin is a cycloalkene, and an aldehyde of the formula R″—CHO, where R″ is an alkyl or aromatic group of one to twelve carbon atoms, in the liquid phase, in the presence of a catalyst system produced by precipitating silver oxide in the presence of copper(II) borate or a mixture of copper(II) oxide and copper(II) borate, and in the presence of an organic, inert solvent.

4,483,999
PHENOXY ALKANOIC ACID DERIVATIVES HAVING THE ABILITY TO LOWER THE LEVEL OF FATTY SUBSTANCES IN THE BLOOD

Kurt Thiele, Zofingen; Quazi Ahmed, Strengelbach; Rudolf Adrian, Vordemwald, and Ulrich Jahn, Zofingen, all of Switzerland, assignors to Siegfried Aktiengesellschaft, Zofingen, Switzerland

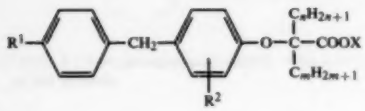
Continuation-in-part of Ser. No. 536,120, Dec. 24, 1979, abandoned. This application Mar. 1, 1977, Ser. No. 773,148

Claims priority, application Switzerland, Dec. 27, 1973, 18144/73; Nov. 18, 1974, 15329/74

Int. Cl.[3] **C07C** *69/76*

U.S. Cl. 560—57 **5 Claims**

1. Compounds of the general formula



wherein

R^1 is hydrogen, halogen or alkyl or alkoxy containing from 1 to 4 carbon atoms;

R^2 is hydrogen, halogen, hydroxy or alkyl or alkoxy containing from 1 to 4 carbon atoms;

n and m are integers of from 1 to 4 such that the sum of n+m is from 3 to 7 inclusive with n differing from m; and

X is alkyl containing from 1 to 4 carbon atoms.

4,484,000
HYDROQUINONES

Frederick H. Howell, Atherton, England, assignor to Ciba-Geigy AG, Basel, Switzerland

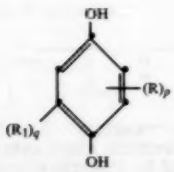
Filed Jun. 18, 1982, Ser. No. 389,992

Claims priority, application United Kingdom, Jun. 19, 1981, 8119015

Int. Cl.[3] **C07C** *69/76*

U.S. Cl. 560—75 **11 Claims**

1. Hydroquinone compounds having the formula:

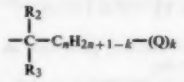


(I)

wherein

p is 1 or 2 and q is 0 or 1, provided that p+q is 1 or 2;

R is a residue of formula:



(II)

wherein Q is selected from the residues:

—$COZR_4$ wherein Z is O or NR_5, and R_4 independently is H, a straight or branched chain alkyl having from 1 to 20 carbon atoms, optionally interrupted by 1 to five oxygen atoms, and optionally substituted by a group OR_6 wherein R_6 is C_1–C_{12} alkyl, C_3–C_{12} cycloalkyl, straight or branch C_3–C_{20} alkenyl, C_6–C_{10} aryl or C_7–C_{13} aralkyl, or R_4 is a straight or branched chain alkenyl group having from 3 to 20 carbon atoms, a cycloalkyl group having from 3 to 12 carbon atoms, an aryl group having from 6 to 10 carbon atoms optionally substituted by a C_1–C_4 alkyl group; or an aralkyl group having from 7 to 13 carbon atoms, a 5- or 6-membered heterocycle containing an oxygen atom and optionally substituted by one or two C_1–C_4 straight- or branch chain alkyl groups; or methyl substituted by a 5- or 6-membered heterocycle containing an oxygen atom and optionally substituted by one or two C_1–C_4 straight- or branch chain alkyl groups; and when Z is —NR_5, R_5 is hydrogen or a straight or branched chain alkyl group having from 1 to 20 carbon atoms, or R_4 and R_5 together with the nitrogen atom to which they are each bonded may form a 5- or 6-membered heterocyclic ring, optionally substituted by one or two C_1–C_4 alkyl groups;

n is an integer from 1 to 20; k is 1 or 2; R_2 and R_3 are the same or different and each is straight or branched chain alkyl group having from 1 to 5 carbon atoms and, when Q is CO_2R_4, either R_2 or R_3 is optionally substituted by a —CO_2R_4 group, the R_4 groups being independent, or R_2 and R_3 may be so linked to the residue C_nH_{2n+1-k} that there is formed a C_5–C_{12} cycloalkylene residue substituted by the group —$(CO_2R_4)_k$, the R_4 groups being independent, wherein R_4 and k have their previous significance, R_1 is C_1–C_8 straight or branched chain alkyl, or a residue of formula II as hereinbefore defined, and when R_1 is a residue of formula II, then R_1 and R may be the same or different;

and salts thereof with organic or inorganic acids and bases.

4,484,001
METHOD FOR PREPARING N-BENZYLOXYCARBONYL AMINO ACIDS CONTAINING ADDITIONAL FUNCTIONALITY

James A. Krogh, Mount Prospect, Ill., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 18, 1983, Ser. No. 553,214

Int. Cl.[3] **C07C** *125/065*

U.S. Cl. 560—160 **20 Claims**

1. In the method wherein alkali metal salt of a amino acid which is devoid of tertiary amino groups and quaternary ammonium groups, and which contains in addition to a primary amino group and at least one carboxylate anion, at least one functional group selected from the class consisting of hydroxyl, additional primary amino, secondary amino, primary imido, and primary amido, is reacted with benzylhaloformate selcted from the class consisting of ring-substituted benzylchloroformate, ring-unsubstituted benzylchloroformate, ring-substituted benzylbromoformate, and ring-unsubstituted benzylbromoformate in a polyphase reaction mixture comprising an organic liquid phase and an queous liquid phase to produce alkali metal salt of an N-benzyloxycarbonyl amino acid in which the benzyl is substituted or unsubstituted and which contains said functional group, the improvement comprising conducting the reaction in the presence of a phase-transfer reagent comprising crown ether, silacrown ether, or a mixture thereof.

4,484,002
PROCESS FOR PRODUCING METHYL ACETATE FROM METHANOL AND CARBON MONOXIDE USING A NOVEL CATALYST SYSTEM

Jiang-Jen Lin, Round Rock, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Jan. 13, 1982, Ser. No. 339,236

Int. Cl.[3] **C07C** *67/36, 69/14*

U.S. Cl. 560—232 **18 Claims**

1. A process for preparing methyl acetate from methanol and carbon monoxide which comprises contacting a mixture of methanol and carbon monoxide with a catalytic amount of an iodide-free catalyst system which comprises an iodide-free ruthenium-containing compound, an iodide-free cobalt-containing compound and an iodide-free quaternary onium salt or base, heating the resulting mixture at a temperature above 100°

C. and a superatmospheric pressure for sufficient time to produce the desired methyl acetate, and then recovering the same from the reaction mixture.

4,484,003

PREPARATION PROCESS OF β-CHLOROALANINE

Masaharu Ohoka, Yokohama; Toshio Katoh; Ryuichi Mita, both of Kawasaki; Nobuyuki Kawashima; Chojiro Higuchi, both of Kamakura; Nobuhiro Kawashima, Sagamihara; Akihiro Yamaguchi, Kamakura; Shousuke Nagai, Yokohama, and Takao Takano, Fujisawa, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

PCT No. PCT/JP82/00174, § 371 Date Dec. 29, 1982, § 102(e) Date Dec. 29, 1982, PCT Pub. No. WO82/04043, PCT Pub. Date Nov. 25, 1982

PCT Filed May 17, 1982, Ser. No. 459,634

Claims priority, application Japan, May 18, 1981, 56-73521; Jul. 3, 1981, 56-103165

Int. Cl.³ C07C *51/363*

U.S. Cl. 562—574 **4 Claims**

1. Process for preparing β-chloroalanine through a reaction of an aziridine-2-carboxylate with hydrogen chloride, which comprises conducting said reaction in an aqueous medium using, per mole of the aziridine-2-carboxylate:

(i) 2.0 to 2.5 moles of hydrogen chloride when the aziridine-2-carboxylate is alkali metal or ammonium aziridine-2-carboxylate; and

(ii) 4.0 to 5.0 moles of hydrogen chloride when the aziridine-2-carboxylate is alkaline earth metal aziridine-2-carboxylate, adjusting the total concentration of β-chloroalanine and α-chloro-β-alanine in the resulting liquid reaction mixture:

(a) 10 to 47 wt. percent when the aziridine-2-carboxylate is lithium aziridine-2-carboxylate;

(b) 8 to 28 wt. percent when the aziridine-2-carboxylate is sodium aziridine-2-carboxylate;

(c) 8 to 25 wt. percent when the aziridine-2-carboxylate is potassium aziridine-2-carboxylate;

(d) 10 to 41 wt. percent when the aziridine-2-carboxylate is magnesium aziridine-2-carboxylate;

(e) 10 to 46 wt. percent when the aziridine-2-carboxylate is calcium aziridine-2-carboxylate; and

(f) 8 to 31 wt. percent when the aziridine-2-carboxylate is ammonium aziridine-2-carboxylate, and then causing β-chloroalanine to selectively crystallize out at −30° to +40° C. from the resulting liquid mixture.

3. Process for preparing β-chloroalanine, which comprises reacting in an aqueous medium an aziridine-2-carboxylate with hydrogen chloride in an amount, per mole of the aziridine-2-carboxylate, of:

(i) 2.0 to 2.5 moles of hydrogen chloride when the aziridine-2-carboxylate is alkali metal or ammonium aziridine-2-carboxylate; and

(ii) 4.0 to 5.0 moles of hydrogen chloride when the aziridine-2-carboxylate is alkaline earth metal aziridine-2-carboxylate, adjusting the total concentration of β-chloroalanine and α-chloro-β-alanine in the resulting liquid reaction mixture to;

(a) 10 to 47 wt. percent when the aziridine-2-carboxylate is lithium aziridine-2-carboxylate;

(b) 8 to 28 wt. percent when the aziridine-2-carboxylate is sodium aziridine-2-carboxylate;

(d) 10 to 41 wt. percent when the aziridine-2-carboxylate is magnesium aziridine-2-carboxylate;

(e) 10 to 46 wt. percent when the aziridine-2-carboxylate is calcium aziridine-2-carboxylate; and

(f) 8 to 31 wt. percent when the aziridine-2-carboxylate is ammonium aziridine-2-carboxylate;

then causing α-chloroalanine to selectively crystallize out at −30° to +40° from the resulting liquid mixture so as to isolate same, treating the recovered solution, which contains β-chloroalanine and α-chloro-β-alanine, with the hydroxide of an alkali metal or alkaline earth metal or ammonia, and recirculating and re-utilizing the thus-obtained aziridine-2-carboxylate as a starting material.

4,484,004

SUBSTITUTED 1,11-DIAMINOUNDECANES, PROCESSES FOR PRODUCING THEM AND THEIR USE

Dieter Reinehr, Kandern, Fed. Rep. of Germany, and Josef Pfeifer, Therwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

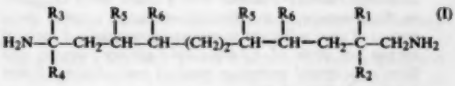
Division of Ser. No. 288,853, Jul. 31, 1981, , which is a continuation of Ser. No. 83,141, Oct. 9, 1979, abandoned. This application Sep. 22, 1982, Ser. No. 421,209

Claims priority, application Switzerland, Oct. 18, 1978, 10770/78

Int. Cl.³ C07C *87/02, 87/00*

U.S. Cl. 564—384 **6 Claims**

1. A compound of the formula I



(I)

wherein

R_1 is alkyl having 1–12C atoms,

R_2 is hydrogen or alkyl having 1–12C atoms,

R_3 is phenyl; phenyl substituted by one alkyl group of 1–4C atoms; 1-naphthyl or 2-naphthyl,

R_4 is hydrogen or alkyl having 1–12C atoms, or

R_1 and R_2 together are alkylene having 3–11C atoms, and

R_5 and R_6 independently of one another are hydrogen or methyl.

4,484,005

PROCESS FOR THE PREPARATION OF CYCLOHEXYL CYCLOHEXANONE

Petrus J. H. Thomissen, Maastricht, Netherlands, assignor to Stamicarbon B.V., Geleen, Netherlands

Filed Feb. 14, 1983, Ser. No. 466,299

Claims priority, application Netherlands, Feb. 15, 1982, 8200563

Int. Cl.³ C07C *45/62, 49/303*

U.S. Cl. 568—350 **6 Claims**

1. A process for preparing cyclohexyl cyclohexanone, consisting essentially in:

(a) self-condensing cyclohexanone to obtain a starting mixture containing cyclohexylidene cyclohexanone, uncondensed cyclohexanone, and water,

(b) subjecting the mixture obtained from step (a) to hydrogenation in the liquid phase, under an atmosphere of hydrogen, at a temperature of about 10° to about 350° C., and in the presence of a hydrogenation catalyst containing a noble metal from Group VIII of the periodic table, and

(c) recovering cyclohexyl cyclohexanone and cyclohexanone from the hydrogenation reaction mixture which results.

4,484,006

SYNTHESIS OF 2-METHYLBUTANAL

Henry R. Menapace, Stow, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jun. 9, 1983, Ser. No. 502,877

Int. Cl.³ C07C *45/50*

U.S. Cl. 568—454 **6 Claims**

1. A process for the hydroformulation of 2-butene into 2-methylbutanal comprising: reacting 2-butene with hydrogen and carbon monoxide in the presence of a hydridocarbonyltris (triphenylphosphine) rhodium catalyst at a temperature of from 25° C. to 200° C. and a pressure of at least 1.013×10^5 pascals for a reaction time of between 15 minutes and 10 hours wherein said reaction is done in a reaction mixture utilizing an

organic solvent in the presence of excess triphenylphosphine wherein the mole ratio of triphenylphosphine in said reaction mixture to rhodium atoms in said catalyst is between 3:1 and 400:1.

4,484,007

PROCESS FOR PREPARATION OF ARYLTERPENOID INSECT MATURATION INHIBITORS

Carlos G. Cardenas; Tse-Lok Ho, both of Jacksonville, and Shing-Hou Liu, Atlantic Beach, all of Fla., assignors to SCM Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 448,230, Dec. 9, 1982, abandoned. This application Apr. 25, 1983, Ser. No. 488,281

Int. Cl.³ C07C *41/01, 43/02*

U.S. Cl. 568—628 **49 Claims**

1. A process for making a biologically active 2,6-dimethyl-2-alkoxy-9-aryl nonane which comprises the steps of:

(a) reacting at a temperature below about 50° C. a 3,7-dimethyl-7-alkoxy-1-octene with a lower alkyl Grignard in the presence of a Grignard exchange catalyst for a period of time sufficient to evolve substantially 1 mole of alkene per mole of 3,7-dimethyl-7-alkoxy-1-octene and form a Grignard exchange product and release a lower alkylene hydrocarbon;

(b) benzylating at a temperature of from −10° C. to 30° C. the resulting Grignard exchange product to form a 2,6-dimethyl-2-alkoxy-9-aryl nonane; and

(c) recovering from the previous step a 2,6-dimethyl-2-alkoxy-9-aryl nonane material;

in which material the aryl group contains at least one substituent attached to a ring carbon atom and is selected from lower alkyl, lower alkoxy, and lower thioalkoxy.

4,484,008

PROCESS IMPROVEMENT FOR DIPHENYL ETHER PRODUCTION

James A. Cook, Jr., Barberton, and James A. Manner, Akron, both of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 30, 1982, Ser. No. 430,107

Int. Cl.³ C07C *41/16, 41/34*

U.S. Cl. 568—639 **19 Claims**

1. In the process of producing 3-(2-chloro-4-trifluoromethylphenoxy)toluene wherein a reaction mixture containing the 3-(2-chloro-4-trifluoromethoxyphenoxy)toluene is formed in dimethylsulfoxide solvent, the improvement which comprises extracting said 3-(2-chloro-4-trifluoromethylphenoxy)toluene from said solvent by the sequential steps of:

(a) adding to the reaction mixture from about 0.01 to 10 percent by weight relative to the weight of 3-(2-chloro-4-trifluoromethylphenoxy)toluene of a 3-(2-chloro-4-trifluoromethylphenoxy)toluene phase-forming amount of water in the absence of any additional solvents, thereby forming a first liquid phase having 3-(2-chloro-4-trifluoromethylphenoxy)toluene as the principal component and a second liquid phase having the dimethylsulfoxide solvent as the principal component, and

(b) separating the 3-(2-chloro-4-trifluoromethylphenoxy)toluene phase from the solvent phase.

4,484,009

PROCESS FOR THE MANUFACTURE OF GLYCOL MONOETHERS

Elie Ghenassia, and André Lakodey, both of Chocques, France, assignors to Atochem, Courbevoie, France

Filed Apr. 4, 1983, Ser. No. 481,835

Claims priority, application France, Apr. 20, 1982, 82 06728

Int. Cl.³ C07C *41/00*

U.S. Cl. 568—678 **8 Claims**

1. Process for the manufacture of a monether of monethylene glycol comprising hydrogenolysis of a 2-alkyl-1,3-dioxolane, with a co-catalytic system comprising palladium and an acid of phosphorous or a phosphoric ester of ethylene glycol and in the presence of ethylene glycol at a temperature and for a time sufficient to effect hydrogenolysis.

4,484,010

HYDROXYBENZYLCYCLOPENTADIENES AND DERIVATIVES THEREOF

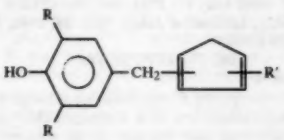
Robert W. Layer, Cuyahoga Falls, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jan. 10, 1983, Ser. No. 456,921

Int. Cl.³ C07C *39/17*

U.S. Cl. 568—732 **17 Claims**

1. Compounds defined by the following formula I, derivatives thereof, and mixtures of compounds of formula I and its derivatives



(I)

where the R groups are individually selected from alkyl groups of 1 to 12 carbon atoms and substituted and unsubstituted alicyclic groups of 4 to 8 carbon atoms, and there are up to 5 R′ groups per each 5-membered ring, each individually selected from hydrogen and alkyl groups of 1 to 3 carbon atoms.

4,484,011

PROCESS FOR PREPARATION OF 4-ISOPROPYLPHENOL

Dale E. Van Sickle, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 2, 1983, Ser. No. 557,691

Int. Cl.³ C07C *37/48, 39/06*

U.S. Cl. 568—781 **8 Claims**

1. The process for preparing 4-isopropylphenol (4-IPP) comprising contacting phenol with 2-isopropylphenol (2-IPP) in the presence of: (1) from about 1/20 to about 2/1 parts per part of 2-IPP of a catalyst comprising the combination of (a) sulfuric acid treated comminuted acid clay having a H_2SO_4 concentration of from about 2% to about 40% by weight of the clay, and (b) a molecular sieve in a parts by weight ratio of from about 10/1 to about 1/10 of (a)/(b); or in the presence of (2) from about 1/20 to about 1/1 parts per part of 2-IPP of trifluoromethane sulfonic acid (TFMSA); at a temperature of from about 90° C. to about 250° C., wherein the initial mole ratio of phenol/2-IPP is from about 6 to about 2, for a sufficient period to give a mole ratio of 4-IPP/2-IPP in the reaction system of from about 0.6 to about 1.5 without significant meta-isopropylphenol formation.

4,484,012

PRODUCTION OF MANNITOL AND HIGHER MANNO-SACCHARIDE ALCOHOLS

Howard Stahl, Scarsdale; Renee Bayha, Ithaca; Charles V. Fulger, Millwood, all of N.Y., and Evan J. Turek, Paramus, N.J., assignors to General Foods Corporation, White Plains, N.Y.

Filed Feb. 29, 1984, Ser. No. 584,692

Int. Cl.³ C07C *29/14, 31/26, 27/04;* C07G *3/00*

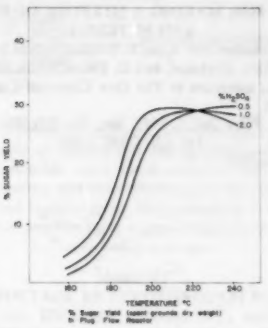
U.S. Cl. 568—863 **39 Claims**

1. A process for preparing manno-saccharide alcohols from coffee extraction residue material comprising the steps of:

(a) slurrying the coffee extraction residue material wherein a major amount of the arabinogalactan has been removed in an aqueous medium wherein the amount of the coffee extraction residue material is between 2% and 70% by weight based on solids in the slurry;

(b) adding an acid catalyst to the slurry in an amount sufficient to adjust the pH of said slurry to between pH 0.5 and to pH 5;

(c) feeding the slurry through a reactor for a time and at a temperature and pressure effective to selectively hydrolyze the mannan fraction of the coffee extraction residue material to manno-saccharides from mannose (DP 1) to about manno-decaose (DP 10);



(d) discharging the slurry from the reactor through an orifice so that the pressure is rapidly reduced to atmospheric, and quenching the hydrolysis reaction;

(e) separating the hydrolyzed coffee extraction residue material from said manno-saccharides;

(f) reducing said separated manno-saccharides for a time and at a temperature and pressure effective to produce their corresponding alcohols.

4,484,013

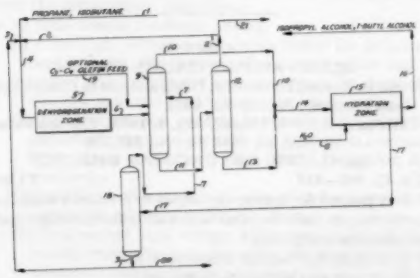
PROCESS FOR COPRODUCTION OF ISOPROPANOL AND TERTIARY BUTYL ALCOHOL

Robert J. Schmidt, Rolling Meadows, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Dec. 30, 1983, Ser. No. 567,205

Int. Cl.³ C07C *29/04, 31/10, 31/12*

U.S. Cl. 568—899 **20 Claims**



1. A process for the production of isopropanol and tertiary butyl alcohol which comprises the steps of:

(a) passing a first feed stream which comprises propane and isobutane into a dehydrogenation zone maintained at dehydrogenation conditions and thereby forming a dehydrogenation zone effluent stream which comprises propane, propylene, isobutane, and isobutylene;

(b) passing the dehydrogenation zone effluent stream into a separation zone and separating propane from the hydrocarbons which enter the separation zone and producing a first process stream, which is rich in propane, and a separation zone effluent stream which comprises propylene, isobutane, and isobutylene;

(c) passing the first process stream into the dehydrogenation zone;

(d) passing the separation zone effluent stream into a hydration zone maintained at hydration-promoting conditions and producing a second process stream, which comprises propylene and isobutane, and a hydration zone product stream which comprises isopropanol and tertiary butyl alcohol and is withdrawn from the process;

(e) passing the second process stream into a fractionation zone operated at fractionation conditions effective to separate the entering hydrocarbons into a net overhead stream, which is rich in C_3 hydrocarbons, and a net bottoms stream which comprises isobutane;

(f) passing the net overhead stream into the separation zone; and

(g) passing the net bottoms stream into the dehydrogenation zone.

6. A process for the production of isopropanol and tertiary butyl alcohol which comprises the steps of:

(a) passing a first feed stream which comprises propane and isobutane into a dehydrogenation zone maintained at dehydrogenation conditions and thereby forming a dehydrogenation zone effluent stream which comprises propane, propylene, isobutane, and isobutylene;

(b) passing the dehydrogenation zone effluent stream into a first fractionation zone maintained at fractionation conditions effective to separate the entering hydrocarbons into a first net overhead stream, which is rich in propylene, and a first net bottoms stream comprising propane, isobutane, and isobutylene;

(c) passing the first net bottoms stream into a second fractionation zone maintained at fractionation conditions effective to separate the entering hydrocarbons into a second net overhead stream, which is rich in propane, and a second net bottoms stream which comprises isobutane and isobutylene;

(d) passing at least a portion of the second net overhead stream into the dehydrogenation zone;

(e) passing the first net overhead stream and the second net bottoms stream into a hydration zone maintained at hydration-promoting conditions, and thereby producing a hydration zone product stream which comprises isopropanol and tertiary butyl alcohol and a hydration zone recycle stream which comprises propylene and isobutane;

(f) passing the hydration zone recycle stream into a third fractionation zone operated at fractionation conditions effective to separate the entering hydrocarbons into a third net overhead stream, which is rich in C_3 hydrocarbons, and a third net bottoms stream which comprises isobutane;

(g) passing the third net overhead stream into the first fractionation zone; and

(h) passing at least a portion of the third net bottoms stream into the dehydrogenation zone.

15. A process for the production of isopropanol and tertiary butyl alcohol which comprises the steps of:

(a) passing a feed stream which comprises propane, propylene, isobutane, and isobutylene into a first fractionation zone maintained at fractionation conditions effective to separate the entering hydrocarbons into a first net overhead stream, which is rich in propylene, and a first net bottoms stream comprising propane, isobutane, and isobutylene;

(b) passing the first net bottoms stream into a second fractionation zone maintained at fractionation conditions effective to separate the entering hydrocarbons into a second net overhead stream, which is rich in propane, and a second net bottoms stream which comprises isobutane and isobutylene;

(c) passing the first net overhead stream and the second net bottoms stream into a hydration zone maintained at hydration-promoting conditions, and thereby producing a hy-

dration zone product stream which comprises isopropanol and tertiary butyl alcohol and a hydration zone recycle stream which comprises propylene and isobutane;

(d) passing the hydration zone recycle stream into a third fractionation zone operated at fractionation conditions effective to separate the entering hydrocarbons into a third net overhead stream, which is rich in C_3 hydrocarbons, and a third net bottoms stream which comprises isobutane;

(e) passing the third net overhead stream into the first fractionation zone;

(f) passing the second net overhead stream and the third net bottoms stream into a dehydrogenation zone maintained at dehydrogenation conditions and thereby forming a dehydrogenation zone effluent stream which comprises propane, propylene, isobutane, and isobutylene; and

(g) passing the dehydrogenation zone effluent stream into the first fractionation column.

4,484,014
HYDROCARBON SYNTHESIS

William T. Nelson, and Ernest A. Znech, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 2, 1983, Ser. No. 490,755
Int. Cl.³ C07C *3/21, 3/62*
U.S. Cl. 585—255 **6 Claims**

1. Process for producing hydrocarbons comprising:

(a) contacting ethylene and trialkyl aluminum as a catalyst under conditions conducive to producing an olefin mixture containing about 5 to 60 mole percent of branched olefin in the range of 6 to 16 carbon atoms such as produce an ethylene growth product, which conditions include a temperature at least 20° C. above the temperature in which this step yields essentially only normal alpha olefins,

(b) separating an olefin mixture having about 6 to 16 carbon atoms per olefin molecule and about 5 to 60 mole percent branched olefins from the ethylene growth product,

(c) oligomerizing said olefin mixture in the presence of a BF_3 catalyst to produce an oligomerization product,

(d) separating a lube-oil range hydrocarbon mixture from said oligomerization product,

(e) prior to or after step (d), hydrogenating at least a portion of said oligomerized hydrocarbon mixture.

4,484,015
SELECTIVE HYDROGENATION

Marvin M. Johnson; Darrell W. Walker, and Gerhard P. Nowack, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

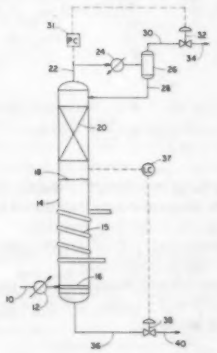
Division of Ser. No. 260,946, May 6, 1981, Pat. No. 4,404,124. This application Jun. 22, 1983, Ser. No. 506,951
Int. Cl.³ C07C *5/08*
U.S. Cl. 585—262 **10 Claims**

1. A method for the treatment of a gaseous mixture comprising ethylene and acetylene, which method comprises selectively hydrogenating the acetylene therein by contacting said mixture together with hydrogen with a catalyst consisting essentially of particles of alpha alumina containing metallic components consisting essentially of palladium and silver wherein the palladium is about 0.01 to about 0.025 weight percent of the catalyst, the weight percent silver is at least twice that of the palladium, the silver is distributed throughout said catalyst particles, and substantially all of the palladium is concentrated in an area within 300 microns of the exterior surface of at least 90 percent of the catalyst particles.

4,484,016
PROCESS FOR MAKING A MIXTURE OF ETHYLENE AND BUTENE-1

Donald M. Maschmeyer; Allan E. Fowler, both of Lake Jackson; Steve A. Sims, Angleton, and G. Eldon White, Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 5, 1983, Ser. No. 510,538
Int. Cl.³ C07C *2/04*
U.S. Cl. 585—510 **10 Claims**



1. A process for making a mixture comprising ethylene and predominantly butene-1 which comprises reacting ethylene with a trialkyl aluminum in a solvent for the trialkyl aluminum in a boiling bed reaction zone under a pressure in the range from 100 to 1,500 psig, a temperature in the range from 200° to 325° C. with an ethylene to trialkyl aluminum weight ratio in the range from 200 to 20,000.

4,484,017
OLEFIN AROMATIZATION PROCESS

Joseph R. Kenton, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 518,862, Aug. 1, 1983,. This application Mar. 13, 1984, Ser. No. 589,258
Int. Cl.³ C07C *2/00*; C10G *35/04*; B01J *23/10*
U.S. Cl. 585—415 **7 Claims**

1. A process for converting olefins to aromatics comprising contacting an olefin reactant with a dehydrocyclizing catalyst composition comprising:

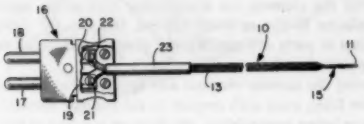
(a) at least one bismuth component, and

(b) at least one lanthanide component.

4,484,018
COAXIAL THERMOCOUPLE WIRE

Dennis M. McLynn, Trevor, Wis., assignor to Pneumo Corporation, Boston, Mass.

Filed Jan. 20, 1983, Ser. No. 459,324
Int. Cl.³ H01L *35/02*
U.S. Cl. 136—230 **11 Claims**

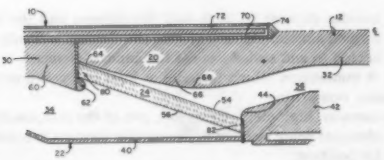


1. A coaxial thermocouple wire comprising an inner thermoelement, a layer of insulation covering said inner thermoelement, and a braided outer thermoelement surrounding said insulation covering said inner thermoelement, said inner thermoelement and braided outer thermoelement being joined at one end of said wire to form a measuring junction.

4,484,019
HIGH VOLTAGE RF FEEDTHROUGH BUSHING

Glenn F. Grotz, Huntington Station, N.Y., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Sep. 3, 1982, Ser. No. 414,543
Int. Cl.³ H01B *17/26, 17/42*
U.S. Cl. 174—9 R **8 Claims**



1. In a high voltage radio frequency bushing having inner and outer coaxial conductors and connectable to a pressurized electrical system and a hard vacuum electrical system for transmitting high voltage radio frequency energy therebetween, the improvement comprising:

a. an inner coaxial conductor having:

(i) a first high voltage end including means for electrical connection to said pressurized electrical system and a second high voltage end including means for electrical connection to said hard vacuum electrical system;

(ii) first, second and third high voltage body portions sequentially disposed between said first and said second high voltage ends of said inner coaxial conductor, respectively;

(iii) said first high voltage body portion having a predetermined first reference outer diameter;

(iv) said second high voltage body portion including a radially outwardly extending collar-like member having an extreme outside diameter greater than said first reference outer diameter;

(v) said third high voltage body portion comprising a substantially oblate ellipsoid with a first truncated polar end contiguous with said second high voltage body portion, and a second polar end located adjacent said second high voltage end of said inner coaxial conductor, said substantially oblate ellipsoid having a maximal outside diameter greater than said first reference diameter and less than said extreme outside diameter of said collar-like member of said second high voltage body portion;

b. an outer coaxial conductor having

(i) a first shielding end including means for electrical connection to said pressurized electrical system;

(ii) a second shielding end including means for electrical connection to said hard vacuum electrical system;

(iii) first, second and third shielding body portions sequentially disposed between said first and said second shielding ends, respectively;

(iv) said first shielding body portion having a predetermined second reference inner diameter positioned adjacent said first shielding end of said outer coaxial conductor so as to radially oppose said first high-voltage body portion of said inner conductor;

(v) said second shielding body portion having an interior diameter greater than said second reference diameter and positioned to radially oppose said second and said third high voltage body portions of said inner coaxial conductor;

(vi) said third shielding body portion having first and second ends and an inner cone-like surface, with said first end contiguous with said second shielding body portion and having a maximum inner diameter less than said second reference diameter and with said second end contiguous with said second shielding end of said outer coaxial conductor and having an inner radius less than said inner radius of said first end of said third shielding body portion;

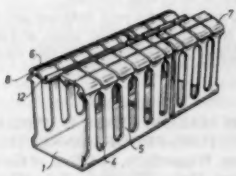
(vii) shoulder means contiguous with and disposed between said second and said third shielding body portions of said outer coaxial conductor so as to radially oppose portions of said inner coaxial conductor which lie between said maximal outside diameter and said second end of said third high voltage body portion; and

c. an insulator member disposed between said collar of said second high voltage conductor portion of said inner coaxial conductor and said shoulder means of said outer coaxial conductor, comprising a hollow, thin-walled truncated cone with a first smaller diameter end joined to said collar-like member of said second high voltage body portion of said inner conductor in a vacuum-tight manner, and a second larger diameter end joined to said shoulder of said outer coaxial conductor in a vacuum-tight manner.

4,484,020
CABLE DUCT

Göran Lööf, Gullspång, and Lars Skarin, Otterbäcken, both of Sweden, assignors to Partex Fabriksaktiebolag, Gullspång, Sweden

Filed Nov. 10, 1983, Ser. No. 550,417
Claims priority, application Sweden, Dec. 10, 1982, 8207095
Int. Cl.³ H02G *3/04*
U.S. Cl. 174—68 C **1 Claim**



1. A cable duct comprising a bottom (1) and two side walls (2, 3) the top portions of which (6, 7) are bent inwards and, adjacent the transition between each side wall (2, 3) and its inwardly directed portion (6, 7), provided with snapping means (8) arranged to engage corresponding snapping means (10) at the longitudinal edges of a lid (9), characterized in that, at their free ends, said top portions (6, 7) have hook-like snapping means (11, 12), the snapping means (11) of the one top portion (7) being arranged alternatively to engage either the

snapping means (12) of the other top portion (6) or the snapping means (8) at the opposite side wall (2), whereby the duct may alternatively be closed with a lid (9) or in either of two different snapping-engagement positions giving the duct reduced cross-sections.

4,484,021

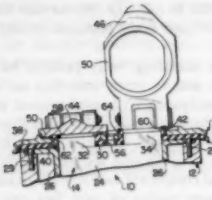
ELECTRICAL OUTLET SEAL

Hermann Schaefer, Bridgeport, and Ernest G. Hoffman, Middlefield, both of Conn., assignors to Harvey Hubbell Incorporated, Orange, Conn.

Filed Aug. 26, 1982, Ser. No. 411,688

Int. Cl.³ H02G *3/18*

U.S. Cl. 174—53 **28 Claims**



1. An electrical outlet, comprising:

an outlet box;

an electrical receptacle mounted in said outlet box and having a projection;

a cover plate extending over said receptacle and box and having a first access opening therein exposing said receptacle and receiving said projection therein;

a first flap coupled to said cover plate, said flap being movable between an open position and a closed position in which it is positioned over said opening; and

a unitary, continuous gasket received between said cover plate and said receptacle and between said cover plate and said outlet box, said gasket comprising a generally planar member formed of resilient material, said planar member having a peripheral configuration generally corresponding to the peripheral configurations of said outlet box and cover plate and having a first aperture extending therethrough,

said first aperture having transverse dimensions in a relaxed condition of said gasket less than the transverse dimensions of said receptacle projection such that when said receptacle projection is forced into said cover plate opening and said gasket aperture, a portion of said gasket adjacent said aperture is stretched and deformed out of the plane of said gasket to form a first peripheral lip surrounding said gasket aperture and said receptacle projection, extending through said cover plate opening and contacting said flap in its closed position;

whereby said gasket forms seals between said box and cover plate, said receptacle and cover plate, and said cover plate and said flap or a plug coupled to said receptacle.

4,484,022

METHOD OF MAKING TENSILE-, PRESSURE-, AND MOISTURE-PROOF CONNECTIONS

Heinz Eilentropp, Wipperfürth, Fed. Rep. of Germany, assignor to HEW-Kabel, Heinz Eilentropp KG, Wipperfuerth, Fed. Rep. of Germany

Filed Nov. 2, 1981, Ser. No. 317,349

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1980, 3041657

Int. Cl.³ H02G *15/08*

U.S. Cl. 174—84 R **17 Claims**

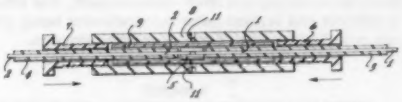
1. The method of making a moisture-, pressure-, and tension-proof connection which includes at least one element, comprising the steps of:

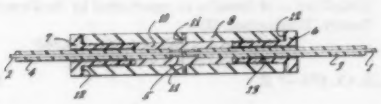
providing an annular element to which the connection is to be made and being made of a relatively high-melting material;

providing one or more of a generally annular thermoplastic filler being a separate component and having a melting point below the melting point of said element, but being normally solid;

inserting the element in the filler and in a position to be sealed, and inserting the filler in said annular element so that the element has a particular concentric position in relation to the annular element, the annular element at least in parts surrounding the element and being radially spaced therefrom;

heating the annular element and applying axial pressure to the filler, axial with respect to the annular element, pressure being applicable to the filler on account of the radial spacing between the element and the annular element, so that the filler will melt but not the annular element, and the filler is deformed to fill all voids in the interior of the





annular element so as to seal the element and the undeformed annular element so that the element is firmly connected to and sealed against the annular element.

7. A connection which includes at least one component or element, comprising:

an annular, high-melting element, one of the components or elements being inserted in the annular element in a particular position;

a deformed annular filler embedding a portion of the one component or element in the annular element on account of the deformation, the annular element being radially spaced from the component or element; and

a plug element traversed by the one element or component and having a plunger portion and a flange inserted in the annular element, the plunger portion having axially compressed the filler when melted to obtain a sealed, moisture-proof, gas-tight, and tension-proof bond and connection between the plug element, the annular element, and the one element or component portion therein.

4,484,023

CABLE WITH ADHESIVELY BONDED SHEATH

Wayne L. Gindrup, Hickory, N.C., assignor to CommScope Company, Catawba, N.C.

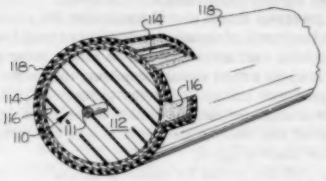
Filed Jul. 19, 1982, Ser. No. 399,346

Int. Cl.³ H01B *11/06*

U.S. Cl. 174—102 R **9 Claims**

1. An electrical cable comprising a core having at least one inner conductor surrounded by a dielectric material, a metallic sheath surrounding said core, and an adhesive bonding said metallic sheath to said core, said adhesive comprising a dried water dispersible copolymer of ethylene and an ethylenically unsaturated carboxylic acid forming a thin film between said metallic sheath and said core, and wherein said copolymer is rendered water dispersible by partial neutralization of the ethylenically unsaturated carboxylic acid by reaction with a

monovalent metal hydroxide, and wherein a portion of said carboxylic acid is unreacted to provide carboxyl groups present in the adhesive for effecting bonding between said metallic outer conductor and said core.



4,484,024

OVERCOATED BULKY SLEEVING AND ELECTRICAL INSULATION METHOD

William H. Bentley, Jr., Rosemont, Pa., assignor to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 311,722, Oct. 15, 1981, abandoned. This application Feb. 15, 1984, Ser. No. 579,758

Int. Cl.[3] **H01B** *3/48, 13/06;* **H01R** *43/00*

U.S. Cl. 174—121 R **33 Claims**

1. An overcoated bulky sleeve for electrical insulation of an electrical conductor comprising:

(a) a tubular sleeve which has a bulky interior and which is interthreaded from bulky, continuous filament yarn having a density of about 70% or less of the density of non-bulky yarn of the same composition and diameter; and

(b) an overcoating which is coated onto and substantially covers and seals the exterior surface of the tubular sleeve.

28. An electrical apparatus having at least one electrical conductor insulated with a bulky sleeve comprising:

(a) a tubular sleeve which has a bulky interior and which is interthreaded from bulky, continuous filament yarn having a density of about 70% or less of the density of non-bulky yarn of the same composition and diameter;

(b) an overcoating which is coated onto and substantially covers and seals the exterior surface of the tubular sleeve.

(c) an impregnation composition which is electrically insulating and substantially fills the bulky interior of the sleeve between the electrical conductor and the overcoating.

30. A method for electrically insulating an elongate electrical conductor, comprising positioning at least a portion of a bulky sleeve around the elongate electrical conductor and introducing an electrically insulating impregnation composition between the electrical conductor and the sleeve to substantially fill the interior of the sleeve, wherein the bulky sleeve comprises:

(a) a tubular sleeve which has a bulky interior and which is interthreaded from bulky, continuous filament yarn having a density of about 70% or less of the density of non-bulky yarn of the same composition and diameter; and

(b) an overcoating which is coated onto and substantially covers and seals the exterior surface of the tubular sleeve.

4,484,025

SYSTEM FOR ENCIPHERING AND DECIPHERING DATA

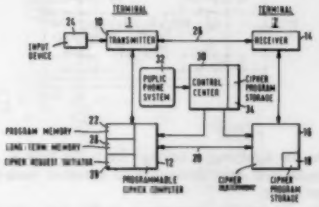
Bernd Ostermann, and Wolfgang Bitzer, both of Weissach, Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 3, 1981, Ser. No. 231,168

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1980, 3003998

Int. Cl.[3] **H04L** *9/02*

U.S. Cl. 178—22.09 **10 Claims**



8. The method of transmitting enciphered data over a data transmission channel between first and second terminals of a communications network wherein more than one cipher algorithm may be utilized, a programmable cipher computer being located at one of said first and second terminals, said programmable cipher computer having a program memory and storing a cipher key; and a cipher equipment being located at the other of first and second terminals, said cipher equipment having a read only cipher program storage, a predetermined fixed cipher algorithm and said cipher key being stored in said cipher program storage, said method comprising the steps of:

storing said predetermined fixed cipher algorithm in a program memory at a location remote from said one terminal;

transmitting said predetermined cipher algorithm from said program memory at the location remote from said one terminal to said programmable cipher computer over a data transmission channel of said communications network;

storing said transmitted predetermined cipher algorithm in the program memory of said programmable cipher computer;

inputting clear data text to a transmitter located at said first terminal;

enciphering said clear data text in accordance with said predetermined fixed cipher algorithm and said cipher key;

transmitting the enciphered data over said data transmission channel to a receiver located at said second terminal; and

deciphering and enciphered data at said receiver in accordance with said predetermined fixed cipher algorithm and said cipher key.

4,484,026

TOUCH TABLET DATA DEVICE

David D. Thornburg, Los Altos, Calif., assignor to Koala Technologies Corporation, Santa Clara, Calif.

Filed Mar. 15, 1983, Ser. No. 475,418

Int. Cl.[3] **G08C** *21/00*

U.S. Cl. 178—18 **4 Claims**

1. Structure for use in inputing the X and Y coordinates of a selected contact point into a computer system, graphic display unit or similar structure, comprising

a first sheet of flexible insulating material containing a first surface and a second surface;

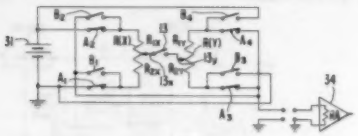
a second sheet of flexible insulating material containing a first surface and a second surface;

resistive material formed on the first surface of said first sheet of insulating material;

resistive material formed on the first surface of said second sheet of insulating material;

a first conductive strip and a second conductive strip formed on two noncontacting edges of the four edges of said first surface of said first sheet adjacent to and in electrical contact with said resistive materials on said first sheet;

a first conductive strip and a second conductive strip formed on two noncontacting edges of the four edges of said first surface of said second sheet adjacent to and in electrical contact with the resistive material on said second sheet;



means for applying a voltage from the first to the second conductive strip through said resistive material on said first sheet;

means, electrically connected to the first and the second conductive strips on said second sheet, for connecting said two conductive strips on said second sheet to the input lead of a means for amplifying; and

means for arranging said first sheet and said second sheet such that said first and second conductive strips on said first sheet are orthogonal to said first and second conductive strips on said second sheet and such that the resistive material on said first sheet faces the resistive material on said second sheet but is separated therefrom by a selected space.

4,484,027

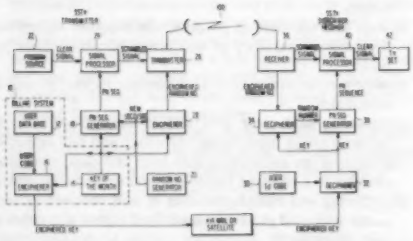
SECURITY SYSTEM FOR SSTV ENCRYPTION

Lin-nan Lee, Germantown, and Russell J. Fang, Brookeville, both of Md., assignors to Communications Satellite Corporation, Washington, D.C.

Filed Nov. 19, 1981, Ser. No. 322,833

Int. Cl.[3] **H04L** *9/02;* **H04K** *1/02*

U.S. Cl. 178—22.13 **19 Claims**



1. In a communications system including a transmitter and a receiver, said transmitter including a program source for providing a program signal representing program information, a transmit signal processor for encrypting said program signal in accordance with a transmit control signal and transmit means for transmitting said encrypted signal, said receiver including receive means for receiving said encrypted signal, a receiver signal processor for decrypting said encrypted signal in accordance with a receive control signal and means for receiving said decrypted signal and providing said program information, the improvement comprising:

first generator means at said transmitter for generating a first sequence of signals representing a first sequence of numbers;

key number means at said transmitter for providing a key number signal representing a key number;

second generator means at said transmitter for generating a second sequence of signals representing a second sequence of numbers, said second generator means being periodically reset by a reset signal comprising the output of said first generator means to thereby generate a plurality of sequence segments each beginning with a reset signal, the output of said second generator means comprising said transmit control signal;

means at said transmitter for enciphering said first sequence of signals with said key number signal and for providing said enciphered first signal sequence to said transmit means for transmission with said encrypted program signal;

means at said receiver for providing said key number signal;

receive deciphering means at said receiver for receiving said enciphered first signal sequence and said key number, deciphering said first signal sequence in accordance with said key number and providing said deciphered first signal sequence as an output; and

receive generating means for generating a sequence of signals representing said first sequence of numbers, said receive generating means being periodically reset by a reset signal comprising the output of said receive deciphering means to thereby generate said plurality of sequence segments, said plurality of sequence segments being provided by said receive generating means to said receive signal processor as said receive control signal.

4,484,028

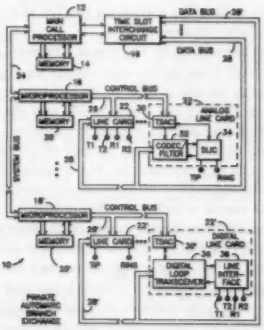
DIGITAL LOOP TRANSCEIVER HAVING A POWER UP/DOWN CIRCUIT

Stephen H. Kelley, Austin, and Henry Wurzburg, Round Rock, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 1, 1982, Ser. No. 438,082

Int. Cl.[3] **H04J** *3/00*

U.S. Cl. 179—2 DP **8 Claims**



1. A power up/power down circuit for powering up and powering down a first digital transceiver coupled to a second digital transceiver in a data burst mode full duplex communication system, the first and second digital transceivers bursting data at first and second frame rates, respectively, comprising:

detection means having an input coupled to a communication line input terminal, and an output, for providing a detect signal in response to the presence of data bursts at the line input terminal;

power control means having a first input coupled to the output of said detection means, a second input coupled to a power enable terminal capable of receiving a power

enable signal, and an output, for powering up and powering down said first digital transceiver in response to said detect and power enable signals; and

data control means having a control input coupled to the output of said power control means, and an output coupled to a communication line output terminal, for transmitting a power up data burst at the first frame rate via a two-wire pair of conductors to said second digital transceiver in response to said power enable signal until receipt by the first digital transceiver of a first data burst from the second digital transceiver in response thereto, said power up data bursts, if more than one, being transmitted every other frame to avoid collision with the first data burst transmitted by the second digital transceiver, and for synchronously transmitting at least one data burst to the second digital transceiver at the second frame rate every data frame in response to both said power enable and detect signals, thereby establishing synchronous transmission and reception of data between the first and second digital transceivers.

4,484,029

CORDLESS TELEPHONE SWITCH AND LINE SELECTOR

David S. Kenney, 431 W. Main St., Kutztown, Pa. 19530

Filed Aug. 29, 1983, Ser. No. 527,323
Int. Cl.³ H04Q *7/04;* H04M *1/05*
U.S. Cl. 179—2 EA **6 Claims**

1. In a cordless telephone headset having a housing and radio transmitter/receiver unit mounted therein in radio communication with a radio base station in contact with a telephone line, a power switch therein and a microphone in combination therewith comprising;

(a) a circular rotary wafer power switch inside the housing with an off position and a positive stop contact point which is an on position angularly displaced from said off position on an outer perimeter of said circular switch said power switch having;

(b) a wiper whose outer end has an indentation formed therein which end rotably and slidably contacts the positive stop contact point to create an on position and whose inner end is attached to a rotatable stem centrally located on the wafer portion of the switch said stem having above the wiper an insulated portion extending outward of the housing upon which are mounted spring clips which hold

(c) an insulated rod having a central passage passing perpendicularly through the rod's longitudinal axis in which is slidably and adjustably inserted

(d) a mouthpiece arm whose first end is fitted with a mouthpiece containing a microphone which microphone is electrically connected to a second end which is fitted with a jack which jack is electrically connected to the radio unit such that

(i) when the wafer power switch is in the "off" position, the mouthpiece arm is planarly parallel to a longitudinal axis of a human head upon which is fitted the headset and the mouthpiece is located superiorly to the head and such that

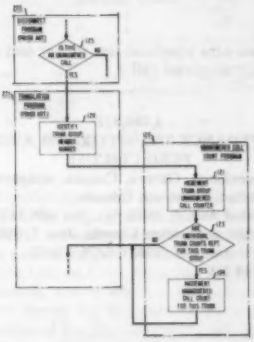
(ii) when the mouthpiece arm is rotated inferiorly and forwardly anterior of the head to a plane at least perpendicular to said longitudinal axis, the wiper is simultaneously rotated to where it makes contact with the positive stop contact point thereby creating an "on" position by which the radio unit may transmit to and receive from the base station to a telephone line.

4,484,030

METHOD AND APPARATUS FOR IDENTIFYING FAULTY COMMUNICATIONS CIRCUITS

Charles D. Gavrilovich, Naperville, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 19, 1982, Ser. No. 369,974
Int. Cl.³ H04M *15/38, 3/22*
U.S. Cl. 179—8 A **32 Claims**



1. In a program-controlled system controlling a node of a network and having groups of functional circuits used for communicating between the nodes of said network, a method of identifying a group of functional circuits recurrently engaged in unsuccessful communications comprising the steps of:

1. detecting disconnect requests for each of said groups of functional circuits;
2. in response to said step of detecting disconnect requests, disconnecting the communications associated with each of said requests;
3. in response to said step of detecting disconnect requests, detecting unacknowledged communications in each of said groups of functional circuits; and
4. in response to said step of detecting unacknowledged communications, measuring the number of unacknowledged communications in each of said groups, whereby a group of functional circuits recurrently engaged in unsuccessful communications is identified by a measure substantially higher than that of other groups of similar size.

4,484,031

INTERFACE CIRCUIT FOR A TELEPHONE SYSTEM

Jerry B. Gray, Richardson; Cuba M. Adams, Irving, and Larry B. Christensen, Garland, all of Tex., assignors to Zale Corporation, Dallas, Tex.

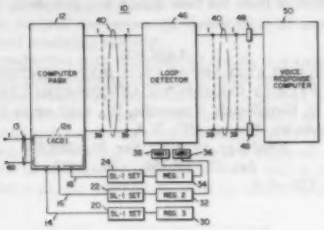
Filed Jun. 21, 1982, Ser. No. 390,536
Int. Cl.³ H04M *3/54;* H04Q *3/64*
U.S. Cl. 179—18 BE **13 Claims**

6. Apparatus for routing a telephone call from one of a group of trunk lines through a private branch exchange (PBX) to a user device over a two-wire telephone line, the apparatus comprising:

a telephone set connected to said PBX via a digital control telephone line for receiving a telephone call from said PBX, said telephone set generating an in-call signal upon receiving the telephone call, and

means responsive to said in-call signal for activating said telephone set to transfer said telephone call by operation of said PBX from said telephone set to the user device

over said two-wire telephone line such that said telephone call is transferred from said digital control telephone line



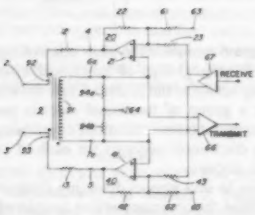
to said two-wire telephone line to free said telephone set for another telephone call.

4,484,032

ACTIVE IMPEDANCE TRANSFORMER ASSISTED LINE FEED CIRCUIT

Stanley D. Rosenbaum, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Aug. 6, 1982, Ser. No. 406,115
Claims priority, application Canada, Jun. 7, 1982, 404561
Int. Cl.³ H04M *1/76, 19/00*
U.S. Cl. 179—18 FA **13 Claims**



13. A line circuit including tip and ring terminals for connection to a two wire communication line, tip and ring amplifiers having outputs connected in series with tip and ring feed resistors to the tip and ring feed terminals for supplying the communication line with energizing currents, the tip and ring resistors being of similar ohmic values, and a control circuit being differentially responsive to voltage signals corresponding to current flows in the tip and ring resistors for generating a voice band a.c. signal at an output thereof and for causing the tip and ring amplifiers to each have a selected effective output resistance and a selected effective a.c. output impedance, the line circuit being characterized by:

an a.c. signal path including inductive means for coupling voltage signals corresponding exclusively to differential alternating current components of the energizing currents to the control circuit.

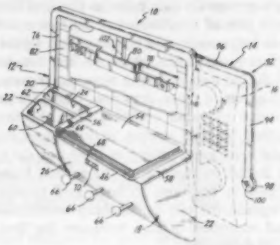
4,484,033

RACK FOR A WALL-MOUNTED TELEPHONE

Yaffa Licari, 875 Ocean Ave., Elberon, N.J. 07740

Filed Jan. 15, 1982, Ser. No. 339,429
Int. Cl.³ A47F *7/00*
U.S. Cl. 179—146 R **29 Claims**

1. A rack for a wall-mounted telephone, comprising a body and mounting means for mounting said body against a wall and alongside a telephone mounted from the wall, said body including a storage compartment defined by a front wall, a bottom wall, a top wall, a pair of converging and diverging sidewalls, and a rear wall hingedly connected to said body, such that said top wall and front wall define an apex therebetween with said side walls correspondingly diverging from said apex toward said bottom wall and said rear wall and with said side walls being located in corresponding planes which converge in the direction from said rear wall to said front wall, and such



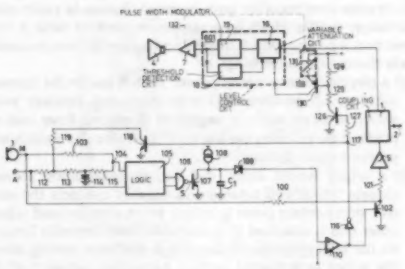
that said rear wall is pivotable between a closed position in which said rear wall prevents access to said storage compartment from behind and an open position in which said rear wall permits access to said storage compartment from behind, whereby said rack may be nested in another similar rack when said rear wall is in its open position.

4,484,034

ANTI-LARSEN-EFFECT ARRANGEMENT IN A TELEPHONE STATION EQUIPPED WITH A LOUDSPEAKER

Gilbert M. M. Ferrieu, Bievres; Roger B. J. Hamel, Clichy; Emmanuel Lefort, Montigny Le Bretonneux, and Francoise Moliere, Paris, all of France, assignors to Telecommunications Radioelectrique et Telephoniques, Savarin, France

Continuation of Ser. No. 258,088, Apr. 27, 1981,. This application Jun. 7, 1983, Ser. No. 500,799
Claims priority, application France, Apr. 25, 1980, 80 09411
Int. Cl.³ H04M *9/08*
U.S. Cl. 179—81 B **9 Claims**



1. An anti-Larsen-effect arrangement in a telephone station having a transmission channel and a listening channel, said listening channel comprising first means for automatic listening signal level control, a speaker amplifier whose gain is manually variable and a loudspeaker, said first means comprising a variable attenuation circuit for attenuating said listening signal in response to compression signals, a pulse width modulator connected between said variable attenuator circuit and said speaker amplifier for pulse width modulating said listening signal which is then amplified by said speaker amplifier and delivered to said loudspeaker, and a threshold detector responsive to the signal supplied by the pulse width modulator which produces a compression signal pulse each time that it detects that the amplitude of the signal received by said microphone reaches a certain threshold, said transmission channel compris-

ing a microphone for supplying an output signal in response to a sound signal received by said microphone, second means connected to said microphone for selectively attenuating the level of the output signal of said microphone to provided a transmit signal, an amplifier having a generally fixed gain connected to said second means for amplifying the transmit signal, and a control chain for said second means, which chain receives the output signal from said microphone and controls said second means to attenuate the level of the transmit signal when the level of the sound signal received by said microphone is less than a sound level threshold S_1, the level of the sound signal received by said microphone from said loudspeaker and which is caused by a remote user being assumed to be lower than level threshold S_1 and the sound signal received by said microphone and produced by a local user being assumed to be within a range including level threshold S_1, and while said chain is selectively not controlling said second means to attenuate said transmit signal said chain provides an additional compression signal S_O to said first means to control said variable attenuator circuit to obtain a predetermined attenuation of the listening signal.

4,484,035

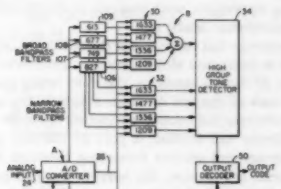
DUAL TONE MULTI FREQUENCY DIGITAL DETECTOR

Martin H. Graham, Berkeley, and Enoch Callaway, Tiburon, both of Calif., assignors to Transwave, Tiburon, Calif.

Continuation-in-part of Ser. No. 191,556, Sep. 29, 1980, abandoned. This application Feb. 22, 1983, Ser. No. 468,744

Int. Cl.³ H04M *1/50*; G01R *23/02*

U.S. Cl. 179—84 VF **9 Claims**



1. A method of determining the spectral composition of a suspect signal with respect to a group of frequencies, comprising the steps of:

(a) passing said signal through a plurality of parallel narrow band filters, each said narrow band filter being centered on a respective one of said frequencies in said group;

(b) passing said signal through a wide band filter spanning said group of frequencies; and

(c) comparing the output of each of said narrow band filters to the output of said wide band filter and passing said signal only if the output of said narrow band filters exceeds a chosen ratio of the output of said wide band filter.

4,484,036

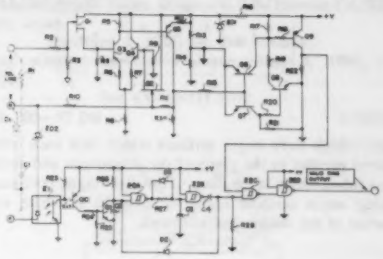
TELEPHONE RING DETECTOR SYSTEM

Stephen V. Lyle, San Pedro, and Bradford E. Hanscom, Downey, both of Calif., assignors to T.A.D. Avanti, Inc., Compton, Calif.

Continuation of Ser. No. 265,023, May 18, 1981, abandoned. This application Apr. 18, 1983, Ser. No. 485,840

Int. Cl.³ H04M *3/02*; H04Q *9/00*

U.S. Cl. 179—84 A **5 Claims**



1. A ring detector system for use in a telephone answering machine for detecting ring signals on the telephone line and for being unresponsive to dialing pulses, said telephone answering machine being used in conjunction with a telephone connected to the telephone line, said telephone line having first, second and third terminals, and in which a particular direct current voltage appears across the first and second terminals for the on-hook condition of the telephone and a different direct current voltage appears cross the first and second terminals for the off-hook condition of the telephone, said ring detector system including: a first section connected across the first and second terminals of the telephone line for sensing the direct current voltage on the telephone line and for producing an output only when the telephone is in an on-hook condition; a second section connected across the second and third terminals of the telephone line and responsive to alternating current ring signals on the telephone line for producing an output in response to such ring signals and being unresponsive to other alternating current signals on the telephone line; and an output circuit connected to the first and second sections and responsive to the two outputs from the first and second sections for producing an output; said first section including an operational amplifier having a differential mode field effect transistor input circuit which further includes first and second direct-current isolating resistors respectively connecting the input circuit of the operational amplifier to said first and second terminals of the telephone line; and said second section including signal-duration timing circuitry for enabling the second section to produce an output only in response to alternating current signals on the telephone line in excess of a particular minimum duration, and further circuitry coupling the second section to the second and third terminals of the telephone line for passing only alternating current signals from the telephone line to the second section which are in excess of a particular minimum frequency and voltage.

4,484,037

RIBBON-TYPE ELECTRO-ACOUSTIC TRANSDUCER WITH LOW DISTORTION AND IMPROVED SENSITIVITY

Joris A. M. Nieuwendijk, and Wilhelmus D. A. M. van Gijsel, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 17, 1982, Ser. No. 378,562

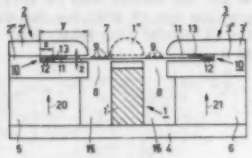
Claims priority, application Netherlands, May 26, 1981, 8102572

Int. Cl.³ H04R *9/02*

U.S. Cl. 179—115.5 PV **19 Claims**

1. An electro-acoustic transducer comprising: a magnet

system which comprises a pole plate and a centre pole between which at least one air gap is formed, and a diaphragm disposed in the air gap, said diaphragm having at least one conductor arranged thereon, said pole plate comprising two plate-shaped



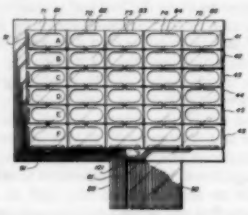
parts which have major surfaces which face each other and extend parallel to the plane of the diaphragm and situated at least substantially in the plane of the diaphragm, portions of the facing major surfaces bounding a space in which an edge portion of the diaphragm is located.

4,484,038

MEMBRANE TOUCH PANEL HAVING IMPROVED CONDUCTOR CONSTRUCTION

William E. Dorman, Boxford, and Gary Brown, Newbury, both of Mass., assignors to Dorman-Bogdonoff Corp., Andover, Mass.

Filed Dec. 1, 1982, Ser. No. 445,694
Int. Cl.³ H01H *13/70*
U.S. Cl. 200—5 A **10 Claims**



1. In a transparent flexible membrane touch panel having contacts comprised of a first set of thin conductive metal film strips formed on a first layer, and of a second set of thin conductive metal film strips orthogonal to said first set and formed on a second layer, said second layer being spaced apart from and selectively movable into contact with said first layer, the improvement comprising silver conductive leads formed on each of said layers, each lead being integrally affixed at one end to, in electrical contact with, and extending from a respective one of said strips for connection to external circuitry.

4,484,039

MEMBRANE SWITCH HAVING IMPROVED SWITCH TAIL

Edward R. Salie, Malden, Mass., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 29, 1983, Ser. No. 527,595
Int. Cl.³ H01H *9/26*
U.S. Cl. 200—5 A **8 Claims**

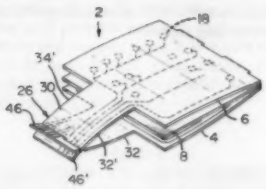
1. A membrane switch assembly of the type comprising a substrate, a membrane which is of a flexible insulating material, and a spacer between the membrane and the substrate, the substrate and the membrane having opposed switch electrodes thereon at switch sites, the spacer having openings therein at the switch sites, circuit conductors extending between and among the switch sites, and a tail extending from the assembly, the circuit conductors having leads which extend into the tail, the membrane switch assembly being characterized in that:

the substrate is also of a flexible insulating material,

the tail comprises a substrate tail section which extends from the substrate and a membrane tail section which extends from the membrane, the tail sections being in parallel planes, being substantially co-extensive, and having opposed first and second tail surfaces which are contiguous with the opposed first and second surfaces of the substrate and the membrane respectively.

the substrate and the membrane each have circuit conductors thereon, the circuit conductors on the substrate having substrate leads which extend onto the first tail surface, the circuit conductors on the membrane having membrane leads which extend onto the second tail surface,

the substrate leads extending parallel to the membrane leads and being offset with respect to the membrane leads, the substrate tail section and the membrane tail section each having a free end and side edges extending to the free end,



each tail section having an end portion which extends from a location adjacent to its free end to its free end, the substrate leads and the membrane leads extending to the free end of the substrate tail section and the membrane tail section respectively and having contact portions extending across the end portions of the substrate tail section and the membrane tail section, the contact portions being exposed with the contact portions of the substrate leads facing oppositely with respect to the contact portions of the membrane leads, and

the membrane tail section and the substrate tail section each have at least one slot extending transversely of the side edges of the tail sections, the slots being spaced from the free ends of the tail sections, a part of the end portion of the substrate tail section extending through the slot in the membrane tail section, a part of the end portion of the membrane tail section extending through the slot in the substrate tail section, the parts of the end portions which extend through the slots having the contact portions of conductors thereon.

4,484,040

DRIVE MEANS FOR A TIMING MECHANISM

William E. Wagle, Bloomington, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Continuation of Ser. No. 337,430, Jan. 6, 1982, abandoned. This application Oct. 24, 1983, Ser. No. 544,629
Int. Cl.³ H01H *43/10*
U.S. Cl. 200—38 R **2 Claims**

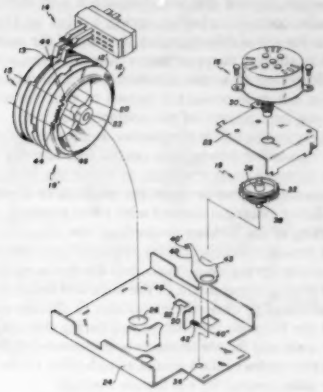
1. In a timing mechanism wherein a camstack is intermittently rotated and wherein electrical switches are opened and closed in accordance with coded indicia of said camstack, an intermittent drive means intermittently moving said camstack comprising:

(a) motor drive means,

(b) a drive pawl of a fixed stroke coupled to said motor drive means,

(c) rotatable ratchet means coupled to said camstack including first ratchet teeth of a first major diameter, and second ratchet teeth of a second lesser major diameter than said first ratchet teeth in axial alignment with said first ratchet

teeth, said first and second ratchet teeth arranged with respect to each other to be separately selectively in working relation to said drive pawl, and



(d) masking means preventing said drive pawl from engaging selected ones of said second ratchet teeth during a time when said drive pawl is in working relation to said second ratchet teeth.

4,484,041

MAGNETICALLY ACTUATED ELECTRIC SWITCH

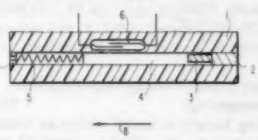
Rudolf Andres, Sindelfingen; Heinz W. Knoll, Stuttgart, and Volker Petri, Aidlingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed May 2, 1983, Ser. No. 490,372

Claims priority, application Fed. Rep. of Germany, May 3, 1982, 3216321

Int. Cl.³ H01H *35/02, 9/00*

U.S. Cl. 200—61.45 M **5 Claims**



1. A magnetically actuated electric switch comprising a switch housing with a channel therein, at least one protective gas switch means, a magnetic means operable to move within the channel of the switch housing past the switch means by accelerations acting on the housing in the channel direction, a soft iron member at one end of the channel and a spring means arranged at the other end of the channel,

the magnet means in its normal, rest position adhering to the soft iron member and being detached from the soft iron member when an acceleration force acting on the switch exceeds an upper threshold value;

the spring means being compressed by the detached magnet means when an acceleration force acting on the switch exceeds a lower threshold value and allows the magnet means to nearly reach its end position, and the spring means, upon disappearance of the acceleration force, being operable to subsequently return the magnet means at least so far that it is again pulled into its normal, rest position by its own magnetic forces; and

the protective gas switch means being a bistable reed switch means located outside of the channel and being switched by the magnet means into the other stable position only when the magnet means is approximately located in the center between the normal and end positions.

5. A switch according to claim 1, wherein the switch is an acceleration pick-up switch for vehicles to detect the presence of predetermined acceleration forces.

4,484,042

SNAP ACTION PUSH BUTTON SWITCH

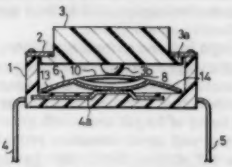
Yasuo Matsui, Iwaki, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Aug. 2, 1983, Ser. No. 519,684

Claims priority, application Japan, Aug. 3, 1982, 57-117355[U]

Int. Cl.³ H01H *5/04*

U.S. Cl. 200—67 DB **6 Claims**



1. A push-button switch comprising a contact plate which is curved in one direction and which is formed into a movable contact by providing therein two substantially parallel slits extending in a perimetric direction, forming a movable contact portion between said two slits, and curving both side edges of said contact plate along said slits oppositely to the direction of the curvature of said movable contact portion so as to form normally-contacted contact portions; a switch body which includes first stationary contacts and a second stationary contact; and a push button; said normally-contacted contact portions of said contact plate being normally held in electrical contact with said first stationary contacts of said switch body, while said movable contact portion of said contact plate is depressed and deformed oppositely to the direction of the curvature thereof by said push button, thereby to come into electrical contact with said second stationary contact of said switch body; said contact plate including both-end joint portions which join said movable contact portion and said normally-contacted contact portions integrally, a pair of bent line portions being formed between said each joint portion and said normally-contacted contact portions, said bent line portions being inclined to said slits.

4,484,043

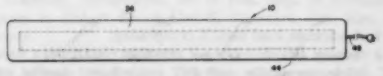
SWITCH APPARATUS RESPONSIVE TO PRESSURE OR DISTORTION

Jeff L. Musick; Robert D. Blaker, and David G. Blaker, Jr., all of Tulsa, Okla., assignors to Bed-Check Corporation, Tulsa, Okla.

Filed Sep. 30, 1982, Ser. No. 429,047

Int. Cl.³ H01H *3/02*

U.S. Cl. 200—85 R **1 Claim**



1. Switch apparatus positionable on a mattress and responsive to distortion by the weight of a patient, comprising:

an elongated, thin, generally rectangular base member of insulating flexible material, the base member being about 3¼ to 5 inches wide and about 25 to 40 inches long, and

about 1/16 inch thick, the base member providing a top and bottom surface and having an elongated generally rectangular opening cut out therein, the cut out being about 1¾ to 2¼ inches wide and 23¼ to 38¼ inches long;

a first generally rectangular, thin, electrically conductive member having a first and second surface, the first surface being supported on said top surface of said base member;

a second generally rectangular, thin, electrically conductive member having a first and second surface, the first surface being supported on said bottom surface of said base member, said conductive members being thereby spaced parallel to each other, and of width and length not substantially greater than the width and length of said base member;

a first non-conductive, thin, generally rectangular plastic cover member affixed to said second surface of said first conductive member;

a second non-conductive, thin, generally rectangular plastic cover member affixed to said second surface of said second conductive member; and

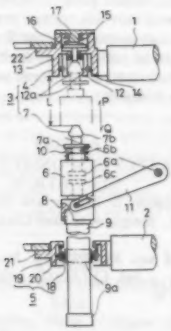
a cable having a first and second conductor, the first conductor having engagement with said first conductive member and the second conductor having engagement with said second conductive member, said first and second cover members being of length and width greater than said base member and said cover members providing overlapping edges, the end portion of said cable having said conductor portions engaging said conductive elements being positioned between said cover members, the peripheries of said cover members being sealed, the conductive members being normally supported by said base member in spaced-apart relationship by the memory of said base and said plastic cover members but which members contact each other when the apparatus is subject to bending or twisting distortion.

4,484,044

VACUUM LOAD SWITCH WITH A DISCONNECTING SWITCH

Kiyohisa Yoshigae, Kounosu, Japan, assignor to Fuji Electric Company, Ltd., Kanagawa, Japan

Filed Jul. 15, 1982, Ser. No. 398,655
Claims priority, application Japan, Jul. 16, 1981, 56-111152
Int. Cl.³ H01H *33/66*
U.S. Cl. 200—144 B **8 Claims**



1. A vacuum load switch comprising:

a vacuum switch having a movable electrode, a fixed electrode, an axially movable control rod having one end attached to the movable electrode and a retaining spring wound around and locked by the control rod for exerting a resilient force tending to separate the electrodes of the vacuum switch;

a disconnecting switch comprising a tapered male contact and an opposing female contact shaped to permit insertion of the male contact therein, the male contact having a relatively small diameter tip portion and a relatively larger diameter base portion attached to the other end of the control rod, the base portion having a larger diameter than the control rod and forming a step therewith, the female contact including spring loaded locking projections for releasably engaging the step of the male contact, and a stopper for exerting a force on the control rod sufficient to close the electrodes of the vacuum switch when the male contact is caused to abut the stopper following engagement of the contacts; and

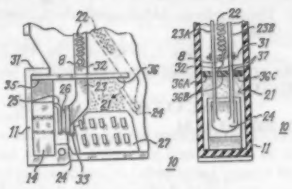
an axially reciprocable conductive member coupled to driving means for moving the conductive member in one or the opposite axial direction to cause the load switch to respectively close or open, the conductive member being in sliding electrical contact with a first terminal, the spring loading of the locking projections, the shapes of the male and female contacts and the resilient force exerted by the retaining spring being such that the force on the control rod during engagement of the male and female contacts is insufficient to close the electrodes of the vacuum switch and the force on the control rod during disengagement of the male and female contacts is sufficient to fully separate the electrodes of the vacuum switch prior to the release of the male contact by the female contact.

4,484,045

MOLDED CASE CIRCUIT BREAKER HAVING IMPROVED ARC RESISTANT PROPERTIES

Raymond K. Seymour, Plainville, and William J. Ashline, Bristol, both of Conn., assignors to General Electric Company, New York, N.Y.

Filed Aug. 16, 1982, Ser. No. 408,375
Int. Cl.³ H01H *33/04, 9/30*
U.S. Cl. 200—144 R **9 Claims**



1. A circuit breaker having improved short circuit current resistance comprising:

an operating hangle mounted within an insulated case;

a pair of contacts operatively connected with a latching mechanism and a trip mechanism;

a parallel blade contact arm having a contact at one end and carrying an operating spring for separating said contacts upon operation of said trip mechanism;

an arc chute for containing an arc upon separation of said contacts; and

an electrically insulating arc shield interposed between said operating spring and said arc chute and retained within said case by means of a recess formed within said case and a top portion of a fixed contact arm for containing said arc within said arc chute.

4,484,046

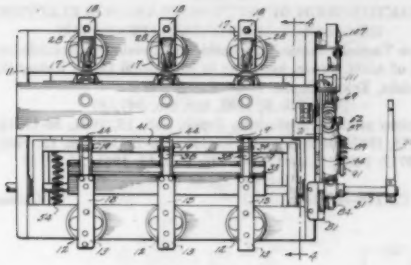
VACUUM LOAD BREAK SWITCH

Don E. Neuhouser, Point Pleasant, W. Va., assignor to Power Distribution Products, Inc., Point Pleasure, W. Va.

Filed Jan. 14, 1983, Ser. No. 458,020
Int. Cl.³ H01H *33/66*
U.S. Cl. 200—144 B **7 Claims**

1. A vacuum load break switch comprising support means having first, second and third spaced apart insulator support members, first, second and third electrically conductive termi-

nals respectively affixed to one end of said insulator support members;, visible knife switch means extending between said first and second conductive terminals, vacuum interrupter means electrically connected between said second and third conductive terminals so that said visible knife switch means and said vacuum interrupter means are connected in series; a manual switch operator mounted on said support means, a grounding member mounted on said support means and electrically connected to ground; interconnect means interconnecting said manual switch operator to both said visible knife switch means and said vacuum interrupter means in a manner such that in a switch closing operation of said manual switch operator, said knife switch means closes before said vacuum interrupter means, and in an opening operation said vacuum interrupter means opens before said visible knife switch means; and said grounding member being mounted such that said visible knife switch means contacts same when in the fully open position to connect said visible knife switch means to ground.



4,484,047

METAL ENCAPSULATED, PRESSURIZED GAS INSULATED HIGH VOLTAGE SWITCHING APPARATUS

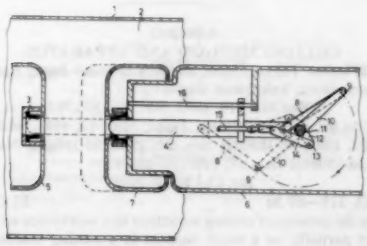
Willi Olsen, and Sreenivasan S. Kumar, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 49,323, Jun. 18, 1979, abandoned. This application Apr. 9, 1982, Ser. No. 367,023

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1978, 2831134

Int. Cl.³ H01H *33/42*

U.S. Cl. 200—148 F **7 Claims**



1. In metal encapsulated, pressurized gas insulated high voltage switching apparatus including two field electrodes which define, in the "off" position, a switching gap between two potentials and a movable switching rod which is surrounded by one of said field electrodes and which crosses the switching gap in the "on" position, said switching rod and surrounding field electrode adapted for movement during the closing process into an intermediate position favoring the field between the two field electrodes, the improvement comprising means, including a mechanical lever linkage having steering rods for the switching rod and the field electrode, arranged to control, in a forced manner, the motion cycles of the switching rod and the field electrode during the closing and opening process such that during closing the movable field electrode reaches its "on" position before said movable switching rod is moved to cross the switching gap to reach its "on" position and during opening a corresponding effect is obtained.

4,484,048

PROCESS AND APPARATUS FOR THE HOMOGENEOUS, ELECTROMAGNETIC INDUCTION HEATING WITH TRANSVERSE FLUX OF CONDUCTING AND NON-MAGNETIC FLAT PRODUCTS

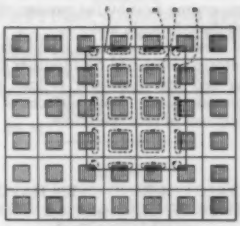
Roger Travers, Chatenay-Malabry; Jean-Paul Camus, Mantes-La-Jolie, and Jean-Claude Bronner, Rueil-Malmaison, all of France, assignors to CEM Compagnie Electro-Mecanique, Paris, France

Filed Jul. 7, 1982, Ser. No. 396,050

Claims priority, application France, Jul. 10, 1981, 81 13689

Int. Cl.³ H05B *6/00*

U.S. Cl. 219—10.43 **13 Claims**



1. Process for the heating by transverse flux electromagnetic induction heating of stationary flat and thin conducting products of variable dimensions, in order to obtain in particular temperature homogeneity in both the transverse and the longitudinal direction, at the boundaries and in the rest of the product, the process comprising the steps of:

generating in the product in two directions a plurality of currents forming elementary current arrays by means of a matrix arrangement of conductors disposed in plural columns and plural rows;

defining arrays of local heating heterogeneity each comprising at least one of said elementary arrays; and

controlling the intensity of each of said plurality of currents as a function of the volume of the array of local heating heterogeneity to which they correspond, so that the average value of power dissipated per unit volume is substantially the same magnitude in each array of local heating heterogeneity.

4,484,049

LIQUID-COOLED HEAT GENERATOR FOR A VEHICLE HEATING SYSTEM

Peter Ahner, Ludwigsburg; Helmut Härer, Remseck, and Siegfred Schustek, Immenstaad, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 16, 1982, Ser. No. 388,891

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1981, 3129817

Int. Cl.³ H05B *5/08*

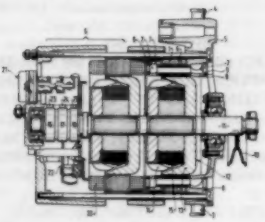
U.S. Cl. 219—10.51 **8 Claims**

1. Induction electric heat generator for the personnel compartment of a motor vehicle having a shaft arranged to be driven by the vehicle engine, and further comprising:

a pole-wheel rotor on said shaft for producing a rotating magnet field;

a lamination-stack stator core surrounding said rotor and of a configuration for permeation by magnetic flux alternating polarity as a result of said rotating field;

a pair of metallic short-circuiting rings (7,8) respectively located at opposite axial ends of the lamination stack of said stator core;



a plurality of armature rods (1) built into said stator each connected at its ends respectively to said shortcircuiting rings for generating heat by the passage of induced electric current therethrough, and

flow channel means for guiding a liquid heat transfer medium of a closed-circulation heat transfer system through passages in said heat generator at least part of which passages provide contact with surfaces of said armature rods, for removal of heat therefrom.

4,484,050

ELECTRIC COOKING OVEN HAVING A TEMPERATURE SENSING DEVICE WITH OUTPUT COMPENSATION

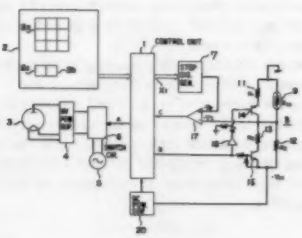
Atsushi Horinouchi, and Satoshi Koide, both of Otsu, Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Continuation of Ser. No. 248,327, Mar. 27, 1981, abandoned. This application Jul. 18, 1983, Ser. No. 514,854

Claims priority, application Japan, Mar. 31, 1980, 55-42360

Int. Cl.³ H05B *6/68*; G01K *7/24*

U.S. Cl. 219—10.55 B **12 Claims**



1. An electric cooking oven comprising means for accommodating a food body to be cooked, means for heating said food body, means for detecting the temperature of said food body during the cooking thereof, said detecting means comprising a thermistor which is detachably attached to the food body to sense the temperature thereof wherein the thermistor has an output characteristic curve of resistance as a function of temperature with a first temperature range in which the error range of the resistance of the thermistor relative to the temperature is smaller than a predetermined value and a second temperature range in which the error range of the resistance of the thermistor relative to the temperature is larger than the predetermined value, an electric circuit means for converting the temperature sensed by the thermistor to an electric signal, a control means for controlling the electric power supplied to the heating means in response to the temperature signal from said circuit means to cook the food body under temperature control, instruction means for operating the thermistor in said second temperature range, and changing means for changing the characteristic curve to thereby increase the gradient of the characteristic curve of the resistance when the thermistor is operating in the second temperature range.

4,484,051

BREAKTHROUGH DETECTION MEANS FOR ELECTRIC DISCHARGE MACHINING APPARATUS

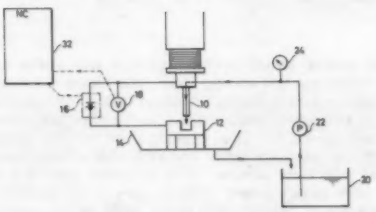
Shigeo Yamada; Tamio Takawashi, and Toshimitsu Sakakibara, all of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 9, 1982, Ser. No. 347,387

Claims priority, application Japan, Feb. 13, 1981, 56-19712; Feb. 13, 1981, 56-19713; Feb. 13, 1981, 56-19714; Feb. 13, 1981, 56-19715; Feb. 13, 1981, 56-19716; Feb. 13, 1981, 56-19717

Int. Cl.³ B23P *1/02*

U.S. Cl. 219—69 C **10 Claims**



1. An electric discharge machining apparatus, comprising: gap voltage detecting means for detecting a gap voltage variation pattern applied to a power supply unit adapted to apply a predetermined voltage across an electrode and a workpiece of said apparatus, means for storing voltage variation patterns corresponding to transitions between known machining conditions and voltage variation pattern comparing means for comparing said gap voltage variation patterns from said detecting means with said prestored voltage variation patterns, a time instant when said electrode penetrates said workpiece being detected from at least said gap voltage variation patterns when a gap voltage variation pattern matches a prestored voltage variation corresponding to electrode penetration, and circuit means for ending a machining process in response to said detection of electrode penetration.

4,484,052

CUTTING METHOD AND APPARATUS

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Mar. 10, 1982, Ser. No. 356,747

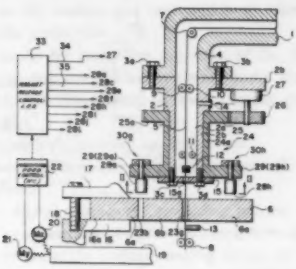
Claims priority, application Japan, Mar. 13, 1981, 56-35191; Nov. 27, 1981, 56-189081; Nov. 30, 1981, 56-190662; Nov. 30, 1981, 56-190664; Dec. 28, 1981, 56-209795

Int. Cl.³ B23P *1/08*

U.S. Cl. 219—69 M **51 Claims**

1. In the process of cutting a contour in a workpiece securely carried partially on a work support in a cutting machine by axially transporting an elongate tool through the workpiece while relatively displacing the work support and the traveling elongate tool to advance the workpiece transversely to the axis of travel of the elongate tool along a programmed cutting path describing said contour, thereby progressively forming, behind the tool advancing along said path, a cutting slot dividing the workpiece into a first portion held secured by the work support and a second portion tending, due to gravity, to fall off the first portion, a method of preventing the second portion from falling off, comprising the steps of:

(a) spacedly juxtaposing with said workpiece, a plurality of members releasably retained respectively by a like plurality of mutually spaced-apart support holders arranged on a support assembly in said machine, each of said members having a width which is greater than the width of said cutting slot and adapted to span the same and, when brought to the proximity of said workpiece, being capable of being automatically anchored thereon by an intrinsic retention force;



(b) initiating the cutting of said workpiece while maintaining said members respectively retained by said support holders; and

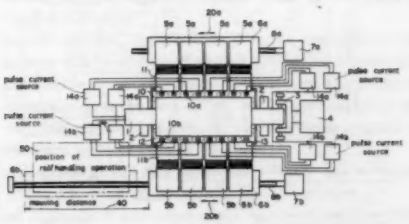
(c) during the course of cutting of said contour in said workpiece, successively releasing said members from said respective support holders whereby said members are successively deposited at mutually spaced-apart locations on said cutting slot but substantially outside the slot so that each of the members securely bridges said first and second portions across said slot.

4,484,053

DEVICE FOR ELECTRICAL DISCHARGE MACHINING OF A WORK IN THE FORM OF A ROLL

Katsumi Michishita; Mitsugi Kawano, both of Fukuyama; Fujio Aoshima, Nagoya; Yukio Kato, Kani, and Tetsuhiro Asamoto, Nagoya, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha and Nippon Kokan Kabushiki Kaisha, both of Tokyo, Japan

Filed Sep. 27, 1982, Ser. No. 423,741
Claims priority, application Japan, Sep. 30, 1981, 56-156001
Int. Cl.³ B23P *1/02*
U.S. Cl. 219—69 E **8 Claims**



1. A device for electrical discharge machining of a work in the form of a roll comprising:

a rotary shaft for supporting and rotating the work;

a first row of electrodes mounted opposite to the roll and on one side of said rotary shaft;

first means for holding said first row of electrodes and moving it axially of said rotary shaft;

a first pulse source for supplying pulsed voltage across said first row of electrodes and said roll;

a second row of electrodes mounted opposite to said roll and on the other side of said rotary shaft of said first row of electrodes;

second means for holding said second row of electrodes and moving it axially of said rotary shaft to a position that does not obstruct the roll handing operation independently of the movement of the first row of electrodes caused by said first means; and

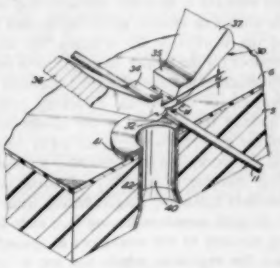
a second pulse source for supplying pulsed voltage across said second row of electrodes and said roll.

4,484,054

SHORT PULSE SOLDERING SYSTEM

Ronald Morino, Seacliff, N.Y., assignor to Kollmorgen Technologies Corporation, Dallas, Tex.

Continuation of Ser. No. 376,658, May 10, 1982,. This application Jan. 25, 1984, Ser. No. 573,627
Int. Cl.³ B23K *1/12*
U.S. Cl. 219—85 M **35 Claims**



1. A high speed method of operating in the presence of solder melting at about 450° F. for soldering a wire lying across a terminal pad or the like on a circuit board, using a soldering tool of predetermined mass, comprising:

(a) selecting the effective mass of said soldering tool so that the quantum of heat energy stored therein is only slightly in excess of that required for an effective solder joint of solder melting at about 450° F. and is substantially used up during formation of the solder joint;

(b) heating said effective mass to a preselected high temperature below that which would cause rapid deterioration of the tool;

(c) bringing said tool into thermal contact with the wire to be soldered when lying across the terminal pad;

(d) while in thermal contact

(i) substantially imparting just enough heat to said wire and said terminal pad to complete a solder joint, and

(ii) permitting solidification of said solder;

(e) said quantum of heat energy being insufficient to permit significant heat migration into the circuit board beyond said terminal pad; and

(f) wherein said soldering tool is raised to a temperature selected so that the solder joint is formed in less than 500 milliseconds.

4,484,055
SPOT WELDER

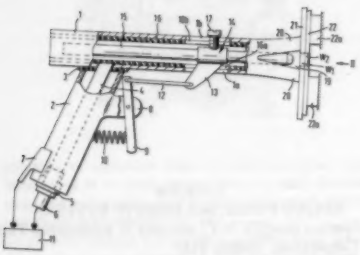
Maurice S. Haines, 53 Middleton Close, Tysoe, Warwickshire, and Victor A. Keller, 32-33 Cattle Market St., Norwich, Norfolk, both of England

Division of Ser. No. 309,052, Oct. 6, 1981,. This application Jul. 27, 1983, Ser. No. 517,645

Claims priority, application United Kingdom, Oct. 7, 1980, 8032230

Int. Cl.³ B23K *9/28*

U.S. Cl. 219—86.21 **10 Claims**



1. A spot welder comprising support means for an elongate electrically conductive element, a holder for said element mounted on the support means for movement relative thereto whereby said element is movable towards and away from a workpiece to enable an electric arc to be formed between the element and the workpiece for welding the workpiece, an operating member for the holder, said operating member being mechanically attached to said holder and operable manually to control movement of the holder, a locking member on the holder for locking the element in the holder whereby said movement of the elements towards and away from the workpiece to weld the workpiece is controllable by manipulation of said operating member, a plurality of elongate workpiece engaging members extending longitudinally from the support means, said elongate members having free ends for engaging and applying pressure to the workpiece at spaced apart positions adjacent the region in which the arc is struck, and a plurality of elongate observation areas defined between the elongate workpiece engaging members, whereby the weld site can be viewed through said observation areas and the user can manually retract said element to extinguish the arc when he sees a pool of molten metal form at the weld site, thereby forming an effective weld.

4,484,056
METHOD AND APPARATUS FOR CONVEYING AT LEAST ONE WELDING OR SOLDERING ELECTRODE TO A WORK PIECE

Jame Rossell, Lausanne, Switzerland, assignor to Rossell Electronique SA, Switzerland

PCT No. PCT/CH81/00049, § 371 Date Jan. 8, 1982, § 102(e) Date Jan. 8, 1982, PCT Pub. No. WO81/03297, PCT Pub. Date Nov. 26, 1981

PCT Filed May 11, 1981, Ser. No. 339,439

Claims priority, application Fed. Rep. of Germany, May 14, 1980, 3018384

Int. Cl.³ B23K *11/00*

U.S. Cl. 219—86.51 **12 Claims**

1. A method for conveying at least one welding or soldering electrode toward a workpiece comprising the steps of:

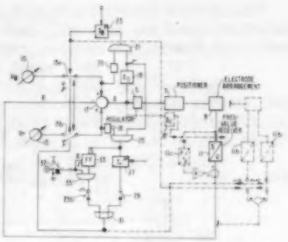
presetting a rated position signal corresponding to a desired electrode position relative to the workpiece;

measuring the actual electrode position and generating an actual position signal before the electrode reaches said workpiece;

forming a position control difference signal as a function of the difference between said rated position signal and said actual position signal;

conveying the electrode controlled by said position control difference signal toward said workpiece;

measuring the actual pressure between the workpiece and the electrode and generating a corresponding actual pressure signal;



providing a rated pressure signal according to a desired value of said pressure;

forming a pressure control difference signal as a function of the difference between said actual pressure signal and said rated pressure signal; and

conveying the electrode controlled by said pressure control difference signal on the workpiece, after said actual position signal reaches said rated position signal at least to a predetermined amount.

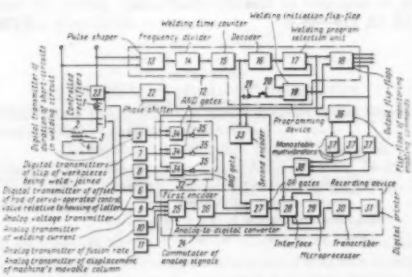
4,484,057
RESISTANCE FLASH BUTT WELDING PROCESS MONITOR

Nikolai V. Podola; Vadim P. Krivonos; Boris L. Grabchev; Evgeny I. Dovgodko, and Alexandr M. Kobylin, all of Kiev, U.S.S.R., assignors to Institut Elektrosvarki Imeni E.O. Patona Akademii Nauk Ukrainskoi SSR, Kiev, U.S.S.R.

Filed Jan. 15, 1982, Ser. No. 339,677

Int. Cl.³ B23K *11/04*

U.S. Cl. 219—109 **1 Claim**



1. Apparatus for monitoring the process of continuous resistance flash butt welding, by a welding machine having a first clamp means for holding the workpieces to a movable column, and second clamp means for holding another workpiece to a stationary column, actuator means having a servo control value and rod for moving said movable column toward said stationary column, a welding transformer having a primary winding, a welding circuit and current transformer and programming means for operating said machine in a preset sequence and time, comprising:

analog means for sensing the welding current, operatively coupled with the primary of said welding transformer;

analog means for sensing the voltage applied to the primary winding of said welding transformer;

digital means for measuring the duration of a short-circuit in the welding circuit, operatively coupled with the primary winding of said welding transformer and maintaining an output signal during the preset time;

digital means for measuring the amount of slip of the workpieces in the clamps, and maintaining an output signal during the preset time,

a digital means for measuring the offset of the rod of the servo-operated control valve mechanically coupled to said rod, and maintaining an output signal during the preset time,

analog means for measuring the fusion rate,

analog means for measuring the displacement of said movable column,

means for digital recording the welding process variables, having a commutator of signals incoming from said analog means to sense the voltage, analog means to sense the welding current, analog means to measure the fusion rate, and analog means to measure the displacement of the movable column having a control input and an output,

an analog-to-digital converter of the output signal of said commutator of signals, coupled to the output of said commutator, a first OR-gate having a first input coupled to said analog-to-digital converter, second and third inputs and an output,

an interface having an information input coupled to the output of said first OR-gate, a triggering input, an address bus coupled to the control input of said commutator of signals, a first output delivering the information for recording, and a second output, a microprocessor operatively coupled with said interface, and a digital printer coupled to the first output of said interface via a transcriber, a first encoder, controlled by a signal produced on the address bus of said interface and generating a numerical code which corresponds to output signals of said digital means to measure the duration of a short-circuit, said digital means to measure the amount of slip, and said digital means to measure the offset of the rod, the output of said first encoder being coupled to the second input of the first OR-gate,

a second encoder, controlled by a signal produced on the address bus of said interface and generating a numerical code of the running time of welding in response to a signal incoming from the first output of said programming device, the output of said second encoder being coupled to the third input of the first OR-gate,

a second OR-gate having a plurality of inputs and an output coupled to the triggering input of said interface,

a set of flip-flops according to the number of control commands, connected with the outputs thereof to a fourth output of said programming means,

a plurality of first monostable multivibrators each having an input coupled to one flip-flop of said set of flip-flops, and an output coupled to one of the plurality of inputs of said second OR-gate, and

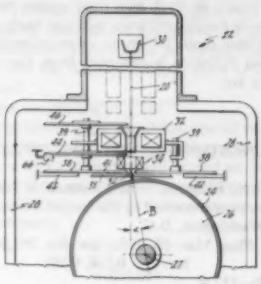
a second monostable multivibrator having an input coupled to a second output of said programming device and an output coupled to one of the plurality of inputs of said second OR-gate.

4,484,058

ELECTRON BEAM HOLE DRILLING APPARATUS

Curtiss G. Howard, Manchester, Conn.; Lester W. Jordan, Cranston, R.I.; Chester E. Yaworsky, Glastonbury, and Frank L. Zampino, Enfield, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 25, 1982, Ser. No. 361,665
Int. Cl.³ B23K *15/00*
U.S. Cl. 219—121 EJ **7 Claims**



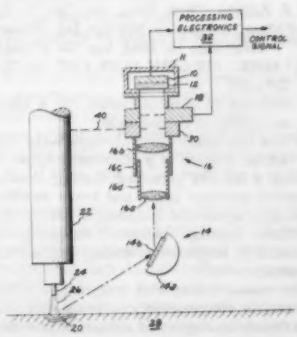
1. Apparatus for electron beam drilling a workpiece comprising a chamber for receiving and holding a workpiece; an electron beam gun, attached to the chamber, the gun containing a filament for emitting electrons, a system of electromagnets for shaping and guiding the electrons into a beam travelling along a primary path within the gun, the path extending into the chamber; and primary shields positioned at the end of the gun proximate the workpiece holding zone within the chamber, characterized by an interior movable shield mounted among the system of electromagnets and along the beam path within the gun, the shield having a recess at its periphery to receive debris in the form of material expulsed from a workpiece and travelling generally along the beam path, the motion of the shield conveying debris received in the recess to a location spaced apart from the beam path; and means for removing debris from the recess, positioned at the said location.

4,484,059

INFRARED SENSOR FOR ARC WELDING

Robert D. Lillquist, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 26, 1982, Ser. No. 371,704
Int. Cl.³ B23K *9/10*
U.S. Cl. 219—130.01 **11 Claims**



11. An electric arc torch welding system in which an electric

welding arc is struck between a torch and a workpiece, said system comprising:

an electric arc torch for producing said electric welding arc;

infrared detection means for receiving infrared radiation from the vicinity of the arc produced by said torch, said infrared detection means thereby producing electrical signals in response to the intensity of infrared radiation impinging upon said detection means; and

filter means disposed with respect to said detection means so that said infrared radiation impinging upon said detection means passes through said filter means, said filter means selectively passing infrared radiation having a wavelength greater than about 3 microns, whereby emitted rather than reflected radiation is detected from the vicinity of the welding arc.

4,484,060

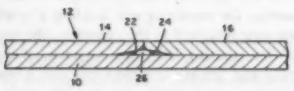
GAS-TUNGSTEN ARC WELDING OF ALUMINUM ALLOYS

Lowell D. Frye, Kingston, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 25, 1982, Ser. No. 361,932

Int. Cl.³ B23K *9/00*

U.S. Cl. 219—137 R **4 Claims**



1. A method for gas-tungsten arc welding of contiguous portions on an aluminum alloy overlay disposed in a contacting relationship with a substrate formed of a metal dissimlar to the aluminum alloy comprising the steps of:

providing fay surfaces of the overlay portions with a diamond machined surface finish having a surface roughness in the order of about 1 microinch; placing a load on at least one of the portions for urging the fay surfaces together; and

providing heat input at the fay surfaces with the tungsten arc at a value adequate to effect a full penetration weld exhibiting essentially no oxide inclusions and no porosity between said portions with said value of heat input being less than that which would effect thermal damage to the substrate or form inclusions of the substrate metal in the weld.

4,484,061

TEMPERATURE CONTROL SYSTEM FOR LIQUID CHROMATOGRAPHIC COLUMNS EMPLOYING A THIN FILM HEATER/SENSOR

Richard J. Zelinka, Circle Pines, and Carl W. Sims, St. Paul, both of Minn., assignors to Sys-Tec, Inc., Minneapolis, Minn.

Filed May 13, 1982, Ser. No. 377,627

Int. Cl.³ H05B *1/02*; **G01N** *31/08*; **F16L** *53/00*; **F24H** *1/12*

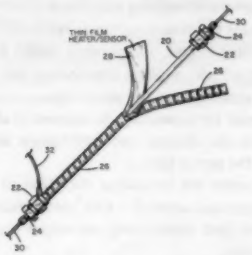
U.S. Cl. 219—301 **7 Claims**

1. A temperature control system for a chromatographic column comprising in combination:

a first thin film heater for removable wrap mounting about an exterior surface of a chromatographic column, comprising a foil-like patterned heating element adhesively mounted between upper and lower flexible, electrically insulative layers and including a patterned foil-like temperature sensing element integrally coextensively mounted in temperature sensing relation to said heating element;

retainer means coextensive with said thin film heater for removably compressively securing said thin film heater and the chromatographic column in heat transfer relation; and

temperature control means responsively coupled to said sensing element for controlling the watt density applied to said heating element in a linear proportional fashion,



thereby maintaining a predetermined temperature gradient over the length of the chromatographic column.

4,484,062

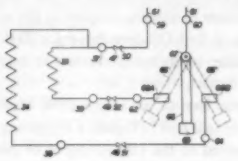
HEATER STRUCTURE

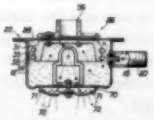
Orestes Estévez, 7801 SW. 22nd St., Miami, Fla. 33155

Filed Jul. 23, 1982, Ser. No. 401,094

Int. Cl.³ H05B *1/02*; **F24H** *1/10*; **H01H** *35/40*

U.S. Cl. 219—309 **1 Claim**





1. An auxiliary heater structure of the type primarily designed for heating water issuing from a water supply pipe, said heater structure comprising housing means including a water inlet means manually attachable to a water supply in receiving relation thereto, said housing means further including a water chamber including a water outlet means, said water chamber disposed to receive water therein from said water inlet means, a contact casing disposed on said housing means adjacent to said water chamber and including a plurality of contact terminals secured on the interior thereof; switch means attached to said contact casing and having power terminal means adapted to be connected to an electrical power supply source, said switch means including a plurality of switch terminals and a lever means movable into and out of current conducting relation between said switch terminals and said power terminal means, a heating assembly comprising a first resistance coil and a second resistance coil, each differing in heat output and disposed within said water chamber in heat transferring relation to water therein; diaphragm means secured to said housing means and disposed between said water chamber and said contact casing in segregating, water sealing relation therebe-

tween, a contact assembly mounted on said diaphragm and disposed within said contact casing in engaging relation with said terminal contacts; said diaphragm means formed from a flexible material and positioned in a biased orientation within said contact casing when said water chamber substantially filled with water upon flow of water through said heating chamber from the water inlet means to the water outlet means, said contact assembly including a plurality of contact elements positioned in engagement with said plurality of contact terminals only when said diaphragm is in said biased orientation; each of said first coil and said second coil having one end connected to a first of said plurality of contact elements and the other end of said first and second coils connected to a second and a third of said plurality of contact elements, respectively, said first, said second and a third contact terminal of said plurality of contact terminals when said diaphragm is in said biased orientation, said first, said second, and said third contact terminals being connected to said power terminal means, said plurality of switch terminals including a first and a second switch terminal, said lever means completing current flow to said first coil when interconnecting said power terminal means and said first switch terminal, said level means completing current flow to said second coil when interconnecting said power terminal means and said second switch terminal, whereby current flow can be directed separately to each of said first and said second coils through positioning of said lever means.

4,484,063

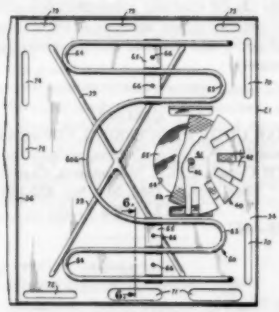
CONVECTION OVEN

Stephen L. Whittenburg, Johnson County, Kans.; James B. Aberer, Danville, Calif.; Albert V. Edmonds; Ching-Wen Yang, both of Jackson County, Mo.; Vernon W. Streck, Cooper County, Mo.; Vernon F. Rodick, and Robert C. Enoch, both of Pettis County, Mo., assignors to Rival Manufacturing Company, Kansas City, Mo.

Continuation of Ser. No. 123,982, Feb. 25, 1980, abandoned. This application Jul. 13, 1982, Ser. No. 397,838

Int. Cl.³ A21B *1/26*; F24C *15/32*

U.S. Cl. 219—400 **24 Claims**



1. A forced air convection oven comprising:

a housing presenting a cooking compartment therein adapted to receive food to be cooked, said cooking compartment having an opening providing access thereto for inserting and removing food;

a door mounted to said housing for opening and closing movement to open and close said opening of the cooking compartment;

means presenting a substantially enclosed air chamber located above said cooking compartment;

a diffuser panel positioned above the cooking compartment between the cooking compartment and the air chamber to provide a partition between said air chamber and cooking compartment, said diffuser panel having an intake opening in communicating relationship with said cooking compartment and a a plurality of spaced apart discharge openings therein providing communication between said air chamber and cooking compartment for circulation of air therebetween;

a heating element mounted in said air chamber;

a fan mounted in said air chamber with an intake side of the fan in communicating relationship with said intake opening to draw air from the cooking compartment into said air chamber, said fan having a discharge side in the air chamber oriented and arranged to direct air in proximity to the heating element for heating of the air and subsequent circulation of the heated air through said discharge openings into the cooking compartment to heat the food therein; and

power means for driving said fan;

said discharge openings of the diffuser panel being arranged in a nonsymmetrical configuration to create a nonsymmetrical flow pattern of discharged heated air into the cooking compartment, said nonsymmetrical flow pattern effective to provide substantially uniform heating of the cooking compartment.

4,484,064

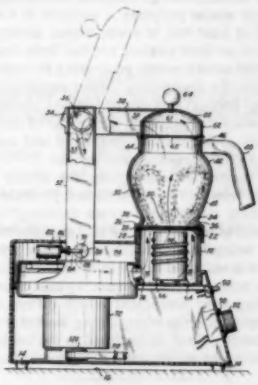
COFFEE ROASTER

Jerome L. Murray, 652 First Ave., New York, N.Y. 10016

Filed Jul. 26, 1982, Ser. No. 401,635

Int. Cl.³ F26B *3/08*; F27D *7/04*

U.S. Cl. 219—400 **9 Claims**



1. An apparatus for roasting coffee beans comprising,

a vessel to contain coffee beans,

said vessel being open at each end,

screen means adapted to overlie at least the vessel bottom open end,

a blower means to supply air under pressure in a flow path passing upwardly through said vessel open ends to levitate and agitate coffee beans within said vessel,

heating means to heat the air prior to its passing through said vessel whereby said beans are levitated and rotated by said heated air to roast said coffee beans to a desired roast degree; and

wherein said vessel is shaped to provide an outwardly radiating configuration from said bottom end and then an inwardly radiating configuration toward said upper end to provide a generally bell-shaped configuration in cross-section thereby to provide a flow path for said coffee beans during levitation and agitation which is generally upwardly directed towards the center of said vessel and downwardly directed radially outwardly from the center of said vessel whereby said heated air circulating through said vessel effectively imparts a rotation to the levitating

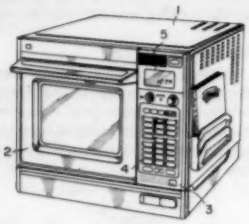
and agitating beans to uniformly roast said beans to a desired roast degree.

4,484,065

AUTOMATIC HEATING APPARATUS WITH SENSOR

Shigeki Ueda, Yamatokoriyama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 23, 1982, Ser. No. 422,195
Claims priority, application Japan, Oct. 30, 1981, 56-175493
Int. Cl.³ H05B *1/02, 6/68*
U.S. Cl. 219—492 **7 Claims**



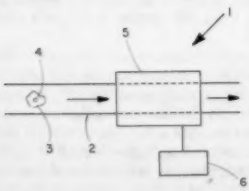
1. An automatic heating apparatus comprising:
a heating cavity in which an object to be heated is placed;
a source of heating energy coupled to said heating cavity;
sensor means whose property is variable as a result of reaction with at least one of water vapor, alcohol and carbon dioxide gas or their mixture emitted from the object being heated, said sensor means generating an output signal; and
control means for controlling power supplied to said source of heating energy, said control means including
counter means for counting the period of time required for the level of the output signal from said sensor means to attain a predetermined setting, and
monitor means for monitoring the sensor output level varying relative to time until said predetermined setting is attained, said control means deciding, on the basis of the result of monitoring by said monitor means, that the object being heated is covered or not with a covering sheet or is enclosed or not in an enclosure, and multiplying the period of time counted by said counter means by a heating time coefficient which differs depending on whether or not the object being heated is covered with the covering sheet or enclosed in the enclosure thereby calculating an additional heating period of time.

4,484,066

GARMENT-COUNTING APPARATUS

Paul L. DeBlieux, 1677 Pickett Ave., Baton Rouge, La. 70808; Raymond J. Lepine, Jr., 7940 Jefferson Hwy., Baton Rouge, La. 70809; Reginald F. Roberts, Jr., P.O. Box 515, Baton Rouge, La. 70821, and Arthur J. Young, 744 Westbrook Dr., Baton Rouge, La. 70815

Filed Sep. 13, 1982, Ser. No. 417,394
Int. Cl.³ G06M *7/04*
U.S. Cl. 235—98 C **6 Claims**



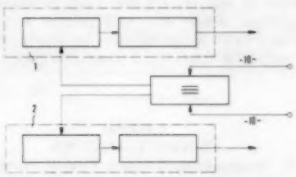
1. An apparatus for counting articles, comprising: a piece of metal attached to each article; a plurality of detectors, each of which generates a magnetic field, and measures a change in the magnetic field when the piece of unmagnetized metal attached to each article passes through the field, thereby generating a signal characteristic of the piece of unmagnetized metal, the detectors spatially arranged and disposed to generate a signal that is substantially independent of the spatial orientation and disposition of unmagnetized the piece of metal attached to each article; and means for counting the number of signals, thereby providing a numerical count of the number of articles.

4,484,067

CARD IDENTIFICATION SYSTEM

Werner Obrecht, Rosenstrasse 7, Wielenbach, Fed. Rep. of Germany (D-8121)

Filed Oct. 8, 1981, Ser. No. 309,785
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1980, 3041109
Int. Cl.³ G06K *5/00*
U.S. Cl. 235—380 **14 Claims**



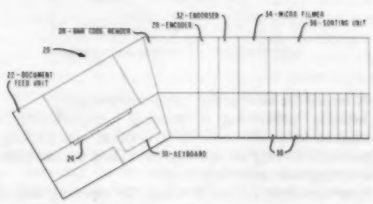
1. An identification system for identifying cards and similar data carriers, containing along with general data an identification code which is compared at every use of the data carrier with a code that is fed into the system to effect generation of yes-or-no information, said system comprising a first timer (1) for blocking communication with the system for a predetermined period subsequent to the input of an incorrect code, a second timer (2) for enabling communication with the system for a second predetermined time period subsequent to the input of a correct code, said first and second timers being operated complementarily.

4,484,068

BAR CODE PROCESSING APPARATUS

Ali T. Mazumder, Waterloo, Canada, assignor to NCR Canada Ltd - NCR Canada LTEE, Mississauga, Canada

Filed Nov. 4, 1982, Ser. No. 439,148
Int. Cl.³ G06K *7/10*
U.S. Cl. 235—462 **9 Claims**



1. A method for processing a bar code having a plurality of bars each consisting of a first predetermined number of elemental areas arranged in a predetermined direction on a document comprising the steps of:
passing the bars past a plurality of detectors with each detector being positioned to sense the presence of one of said elemental areas;

generating detecting signals representing the presence or absence of said elemental area;

applying a threshold value to the detecting signals to substantially reduce any noise signals from the detecting signals;

converting the thresholded detecting signals to corresponding digital signals; and

examining the number of digital signals to output a control signal indicating the detection of a valid bar when a second predetermined number of elemental areas is detected which is less than the first predetermined number with no more than two of the elemental areas detected being separated by a location not occupied by an elemental area.

4,484,069

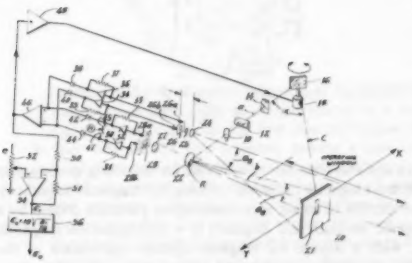
APPARATUS AND METHOD FOR SENSING DISTANCE

Irving R. Brenholdt, Stratford, Conn., assignor to St. Regis Paper Company, New York, N.Y.

Filed Oct. 15, 1981, Ser. No. 311,790

Int. Cl.³ G01J 1/20

U.S. Cl. 250—201 **17 Claims**



1. Apparatus for sensing the distance from a reference point to a remote object comprising:

a light source;

optical means including a movable mirror for projecting light from said light source onto said remote object;

means for sensing the position of said projected light on said remote object;

means for moving said mirror; and

control means, responsive to said sensing means, for producing a drive signal to cause said moving means to move said mirror until said projected light impinges upon said remote object at a location coincident with a fixed predetermined imaginary line extending from said apparatus toward said object, the value of said drive signal when said light impinges at said location being indicative of the distance to said remote object.

4,484,070

SHEET DETECTING DEVICE

Shunzo Inoue, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 21, 1982, Ser. No. 370,477

Claims priority, application Japan, Apr. 30, 1981, 56-65398; Sep. 28, 1981, 56-153488

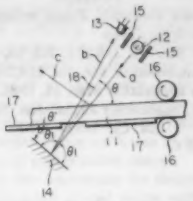
Int. Cl.³ G01V 9/04

U.S. Cl. 250—223 R **14 Claims**

1. A sheet detecting device for detecting a sheet advancing along a predetermined path comprising:

a light source for emitting a light ray in a predetermined direction of said path;

a light reflecting member disposed at a position opposite to said light source in respect of said path, said light reflecting member being disposed such that the angle formed by a bisecting line between the light incident on said light reflecting member and the light reflected by said light reflecting member with a line normal to the surface of the sheet is larger than the critical angle causing the total reflection of the ray on the surface of the sheet; and



a light receiving element disposed at a position opposite to said light reflecting member in respect of said path for receiving the light ray of the light source reflected by said light reflecting member.

4,484,071

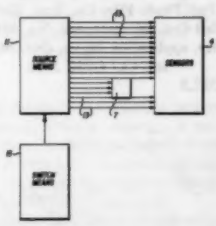
METHOD AND APPARATUS FOR DETERMINING THE LOCATION OF GRADUATED MARKS IN MEASURING APPLICATIONS

Peter-John Webster, 339 West Ave., Ferndale, Randburg, Transvaal Province, and James B. Roulston, 14 Beech St., Bryanston Extension 3, Randburg, Transvaal Province, both of South Africa

Filed Mar. 12, 1982, Ser. No. 357,653

Int. Cl.³ H01J 5/16

U.S. Cl. 250—237 G **12 Claims**



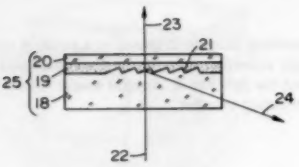
1. Apparatus for determining the location of graduated marks in measuring apparatus comprising source means for emitting electromagnetic radiation, switching means for switching the source means to sequentially emit a plurality of magnitudes of intensity, a plurality of electromagnetic radiation sensors for sensing at least one magnitude of intensity of radiation and at least one mark moveable between the source means and the sensors from one measuring position to another in a direction of measurement transverse to the radiation to cause a restriction in the cross-sectional measurement of radiation between said means and sensors, the sensors for detecting a location of radiation restriction by sensing radiation intensity proportional to an area of sensor receiving faces upon which such radiation falls in use.

4,484,072

DEVICE FOR DETECTING A PORTION OF LIGHT INCIDENT ON AN IMAGE FORMING OPTICAL SYSTEM

Susumu Matsumura, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 285,921, Jul. 23, 1981, abandoned, which is a continuation of Ser. No. 114,201, Jan. 22, 1980, abandoned. This application Mar. 11, 1983, Ser. No. 472,649
Claims priority, application Japan, Jan. 31, 1979, 54-10190
Int. Cl.³ H01J *3/14*
U.S. Cl. 250—237 G **8 Claims**



1. A device for detecting a portion of light incident of an image forming optical system, comprising:

(a) a first transparent member having a refractive index n and having a relief type diffraction lattice of a fine pitch with a peak-to-valley difference formed on one surface thereof, said relief type diffraction lattice substantially satisfying the condition $N\lambda = 2n\Delta$;

(b) a reflective coating provided on the surface of said relief type diffraction lattice;

(c) a second transparent member having substantially the same refractive index as that of said first transparent member, said second transparent member completely fills up the difference between the peak-to-valley in said relief type diffraction lattice; and

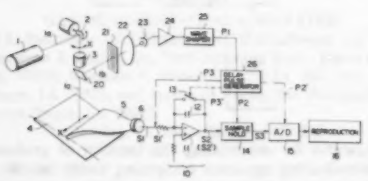
(d) a light detector for detecting the diffracted light from said relief type diffraction lattice.

4,484,073

METHOD OF AND APPARATUS FOR READING OUT RADIATION IMAGE INFORMATION

Yuji Ohara, and Kazuo Horikawa, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 29, 1981, Ser. No. 316,371
Claims priority, application Japan, Oct. 30, 1980, 55-152814
Int. Cl.³ G03C *5/16*
U.S. Cl. 250—327.2 **6 Claims**



1. A method of reading out radiation image information recorded on a stimulable phosphor sheet by exposing the stimulable phosphor sheet to a laser beam which scans on the phosphor sheet in the main scanning and sub-scanning directions to cause the phosphor sheet to emit light according to the recorded radiation image information and photo-electrically detecting the emitted light by use of a photodetector,

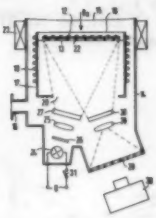
wherein said method comprises generating position reference pulses every time the relative position of said laser beam to said phosphor sheet changes in the main scanning direction by a standard amount, and reading out an integrated value of the output of said photodetector integrated for a fixed time period within each time interval between said position reference pulses.

4,484,074

PLANAR DETECTOR OF A DEVICE FOR DETECTING CORPUSCULAR OR ELECTROMAGNETIC RADIATION, AND METHOD FOR MANUFACTURING SAME

Franz X. Eder, Halmstr. 15a, 8000 München 25, Fed. Rep. of Germany

Continuation of Ser. No. 162,410, Jun. 24, 1980,. This application Apr. 8, 1983, Ser. No. 482,012
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1979, 2931096
Int. Cl.³ G01T *1/00*; G02F *1/09*; G11C *11/44*
U.S. Cl. 250—336.1 **9 Claims**



1. In a planar detector of a device for detecting corpuscular or electro-magnetic radiation utilizing the magnetic superheating properties of small, superconductive particles cooled by a cryogenic medium and disposed in a homogeneous magnetic field, with a device for magneto-optical registration of the irradiated particles by detecting the extent of polarization-plane rotation of polarized light passing through a transparent body of magneto-optically active material disposed in a region about the irradiated particles, the improvement comprising the receiving layer of the detector being subdivided into small metallic superconducting detector elements of approximately equal size and having radiation-receiving surfaces with edge lengths no greater than 0.1 mm, said superconducting detector elements being cooled indirectly and being disposed in a vacuum on a transparent magneto-optically active body of a material which rotates the plane of polarization of plane-polarized light in the presence of a magnetic field, the thickness of said transparent body being less than the edge length of said superconducting detector elements; means for illuminating the superconducting detector elements from the rear with a monochromatic, linearly polarized light beam, said super-conducting detector elements being provided at the rear with contact surfaces engaging said transparent body, said contact surfaces being highly reflective to said monochromatic, linearly polarized light beam; and means for visually observing, photographing or otherwise recording light reflected from said contact surfaces via a crossed polarization filter.

4,484,075

INFRARED INTRUSION DETECTOR WITH BEAM INDICATORS

William G. Kahl, Jr., Brookfield, and John Baldwin, Danbury, both of Conn., assignors to Cerberus AG, Switzerland

Filed May 17, 1982, Ser. No. 379,141
Int. Cl.³ G01J *5/04, 5/08*
U.S. Cl. 250—342 **18 Claims**

1. A passive infrared intrusion sensing device, comprising:

an enclosure having an aperture;

an infrared detecting element in said enclosure;

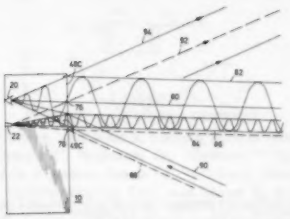
an alarm circuit, connected to said detecting element for providing an electrically detectable indication in response

to a detecting element output above a selected threshold level;

a light source within said enclosure having a selected spacing from said infrared detecting element;

and a lens unit, mounted in said aperture, said lens unit comprising:

at least one first lens segment for receiving radiation from a first selected region of space and having a lens center, focal distance and effective lens area selected to focus infrared radiation emitted by an intruder within said first selected region of space onto said detecting element with sufficient energy to cause said detecting



element to have an output above said threshold level, and to focus light from said light source to a second region of space outside said first selected region; and

at least one second lens segment, having a lens center, focal distance and an effective lens area between about 5 and 25 percent of the effective lens area of said first lens segment, selected to focus light from said light source into said first selected region of space and to focus infrared radiation emitted by an intruder in a third region of space onto said infrared detecting element with insufficient energy to cause said detecting element to have an output above said threshold level.

4,484,076

DIRECT READING DOSIMETER

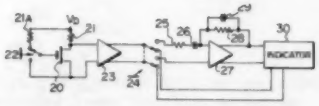
Ian Thomson, Nepean, Canada, assignor to Canadian Astronautics Limited, Ottawa, Canada

Filed Nov. 13, 1981, Ser. No. 321,081

Claims priority, application Canada, Oct. 2, 1981, 387222

Int. Cl.³ G01T *1/24*

U.S. Cl. 250—370 **24 Claims**



1. A direct reading dosimeter comprising:

(a) a semiconductor sensor including a semiconductor substrate, an insulating layer defined a predetermined area disposed over the substrate for trapping positive charge under the influence of ionizing radiation,

(b) means for applying a current to the substrate,

(c) means for sensing the voltage across the portion of the substrate underlying the insulating layer,

(d) means for differentiating the sensed voltage, and

(e) means for displaying the differentiated voltage as a dose rate.

24. A direct reading dosimeter comprising:

(a) a watchcase,

(b) a digital display on the front face of the watchcase,

(c) an audio alarm triggered by a signal having amplitude greater than a predetermined threshold contained within the watchcase,

(d) a first and second manually operated switches fixed within the watchcase for external control,

(e) a semiconductor sensor substantially exposed to ambient ionizing radiation and disposed adjacent the front face of the watchcase, including a semiconductor substrate, an insulating layer disposed over the substrate, and a conductive layer disposed over the insulating layer, said insulating layer being of a type which traps positive charge under the influence of ionizing radiation,

(f) means within the watchcase for applying a bias current to the semiconductor sensor sufficient to offset at least part of any buildup of said positive charge,

(g) means within the watchcase for detecting change in a conductive parameter of said sensor with buildup of said positive charge under the influence of said radiation, and for generating an output signal dependent thereon,

(h) a differentiating circuit within the watchcase,

(i) said output signal being applied via one pair of contacts of one of said switches to the digital display, and via a second pair of contacts of said one of said switches through the differentiating circuit to the digital display,

(j) said output signal also being applied via a pair of contacts of the other of said switches to the audio alarm.

4,484,077

EXPOSURE SYSTEM AND METHOD USING AN ELECTRON BEAM

Seigo Igaki, Inagi; Yoshiro Goto, Yokohama, and Yasuo Furukawa, Inagi, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

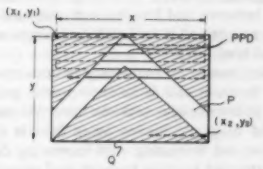
PCT No. PCT/JP80/00125, § 371 Date Feb. 6, 1981, § 102(e) Date Feb. 6, 1981, PCT Pub. No. WO80/02772, PCT Pub. Date Dec. 11, 1980

PCT Filed Jun. 6, 1980, Ser. No. 233,599

Claims priority, application Japan, Jun. 8, 1979, 72088/79; Jun. 8, 1979, 72087/79

Int. Cl.³ H01J *37/00*

U.S. Cl. 250—492.2 **15 Claims**



1. An exposure method for forming a pattern using an electron beam, a pattern package memory, a pattern generation control device, electron beam deflection means, an electron beam irradiation device and a central processor, comprising:

(a) forming a simplified surrounding figure surrounding a fundamental pattern to be exposed;

(b) storing first data for positions of the electron beam in the pattern package memory representing said fundamental pattern based upon said surrounding figure;

(c) storing second data related to contour start-points of the surrounding figure and scanning data for scanning the entire figure in a pattern generation control device;

(d) supplying the second data related to the contour start-points of the surrounding figure and the scanning data from said pattern generation control device to the electron beam deflection means of the electron beam irradiation device; and

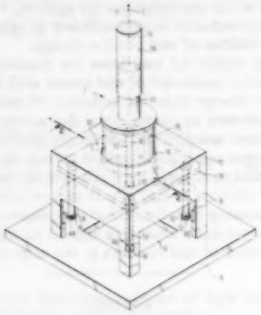
(e) supplying the first data related to the positions of the electron beam from said pattern package memory to the electron beam deflection means of the electron beam irradiation device in response to instructions from the central processor, so that the pattern is formed by said electron beam irradiation device.

4,484,078

MEDICAL APPARATUS

Rolando Tayag, Benecia, and George M. Menor, Martinez, both of Calif., assignors to Siemens Medical Laboratories, Walnut Creek, Calif.

Filed Aug. 2, 1982, Ser. No. 404,466
Int. Cl.³ G02B *5/00*; H01J *29/46*
U.S. Cl. 250—505.1 **13 Claims**



1. A medical apparatus for application of radiation to a patient, comprising in combination:

(a) a housing having an aperture;

(b) a tube enclosing a passageway for the radiation and being disposed on and extending outward from said aperture of said housing, said tube being movable with respect to said housing between an attracted position, in which said tube is extended to a predetermined extent and a retracted position, in which said tube is extended to a lesser extent; and

(c) a security device disposed on at least one of said housing and tube, including

(c1) magnetic means for exercising an attractive magnetic force between said housing and tube, said tube thereby being maintained in said attracted position with respect to said housing; and

(c2) spring means for exercising an attractive mechanical force between said housing and tube, said mechanical force in comparison with the attractive magnetic force of said magnetic means being low in said attracted position and increasing with increasing deviation from said attracted position towards said retracted position;

said security device being designated for the protection of the patient in case the patient moves against the tube, thereby, after having overcome the attractive magnetic force of the magnetic means moving the tube into the retracted position against the initially low mechanical force of the spring means.

4,484,079

REGISTRATION MARK DETECTOR

Howard T. Betz, Chesterton, Ind., and Edward J. Schulenburg, Jr., Danville, Ill., assignors to HurletronAltair, Inc., Danville, Ill.

Filed Oct. 28, 1981, Ser. No. 315,950
Int. Cl.³ G01N *21/86*
U.S. Cl. 250—548 **12 Claims**

1. A scanner for detecting a plurality of discrete register marks on a rapidly moving web, said scanner being disposed at least one-half inch from said web and consisting of:

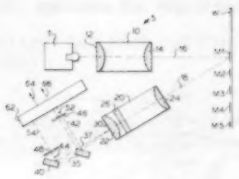
a means for generating a light beam and for directing said light beam at a selected region of said rapidly moving web;

a means for focusing light reflected from said moving web having at least one lens and being orientated at a selected angle with respect to the direction of travel of said light beam;

a first deflector means onto which a first portion of the light reflected from said web is directed by said means for focusing light;

a light sensor on which light deflected by said first deflector means is incident for generating an electrical signal proportional thereto;

a first slot diaphragm disposed at a selected first angular orientation between said first deflector means and said sensor;



a second deflector means onto which a second portion of the light reflected from said web is directed by said means for focusing light; and

a second slot diaphragm disposed at a second selected angular orientation with respect to said first angular orientation of said first slot diaphragm between said second deflector means and said sensor,

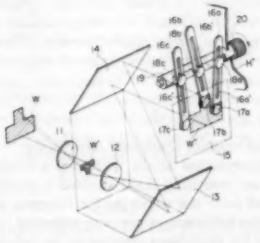
said first and second orientations of said first and second slot diaphragms being selected to conform to the shape of said registration marks such that said light sensor generates a first signal in response to sensing a leading edge of a registration mark and a second signal in response to a trailing edge of the same registration mark.

4,484,080

SHAPE DETECTING DEVICE

Takashi Kumagai, Tokyo, Japan, assignor to Shinko Engineering Research Corp. and Mamiya Koki Kabushiki Kaisha (Mamiya Camera Co., Ltd.), both of Tokyo, Japan

Continuation of Ser. No. 130,052, Mar. 14, 1980, abandoned.
This application Jul. 27, 1982, Ser. No. 402,411
Claims priority, application Japan, Mar. 15, 1979, 54-29440
Int. Cl.³ G01N *21/86*
U.S. Cl. 250—560 **4 Claims**



1. A detecting device comprising:

a focusing glass, having an object side surface, for forming thereon an image of an object to be examined;

a plurality of photoelectric elements, having binary logical outputs, respectively movably arranged at points adjacent to said object side surface;

decoder means, having a plurality of inputs connected to said binary logical outputs, for converting said outputs from respective photoelectric elements to higher-order

logical outputs and outputting said higher-order outputs on higher-order logical output terminals thereof;

a plurality of manually operable level adjusting circuit means respectively connected between the outputs of respective photoelectric elements and decoder means inputs for adjusting respective signal levels, constituting brightness levels, of signals input to said decoder means; and

selecting switch means, connected to said higher-order logical output terminals, for selectively combining said higher-order logical outputs to establish brightness signals of points adjacent the image of said object to be examined.

4,484,081

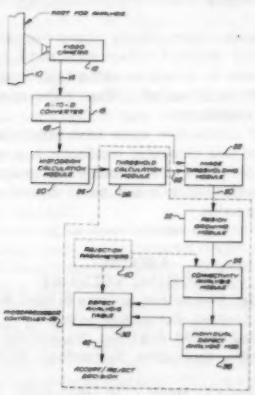
DEFECT ANALYSIS SYSTEM

William S. Cornyn, Jr.; John S. Barrett, both of Rancho Palos Verdes; Donald C. Brabston, Jr., Sherman Oaks; Peter C. Camana, Los Alamitos; James M. McAferty, Mission Viejo; Steven P. Nelson, Harbor City, and Stuart T. Schy, Culver City, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Continuation of Ser. No. 188,651, Sep. 19, 1980, abandoned. This application Mar. 22, 1984, Ser. No. 592,734

Int. Cl.³ G01N *21/88*

U.S. Cl. 250—563 **24 Claims**



1. A defect analysis system for examining a part to determine whether defects are present, said system comprising:

first means for obtaining electrical signals representative of the condition of a plurality of discrete picture elements in a field of view of the part presented for analysis;

thresholding means coupled to said first means for generating a set of electrical signals indicative of picture elements of an anomalous type distinct from the other picture elements;

region growing means for associating contiguous picture elements of the anomalous type to define multiple regions of anomalous picture elements in a single raster scan of the field of view being analyzed;

region statistics generation means for generating statistics relative to the size, shape and orientation of the anomalous regions during the same single raster scan; and

region analysis means for comparing the region statistics with predetermined rejection parameters to determine whether a rejectable defect exists in the part.

4,484,082

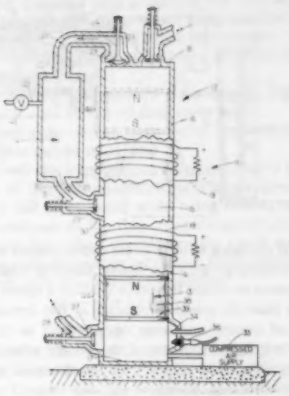
POWER PLANT AND PROCESS UTILIZING GRAVITATIONAL FORCE

Donald C. Bucknam, 2124 S. 110th St., Omaha, Nebr. 68144

Division of Ser. No. 197,314, Oct. 15, 1980, abandoned. This application Jan. 3, 1984, Ser. No. 568,301

Int. Cl.³ F02B *71/00*; F02D *39/10*

U.S. Cl. 290—1 R **10 Claims**



1. A device for converting gas expanding and contracting energy sources into useful other forms of energy, such as inducing an alternating current in a coil, comprising:

a controlled source of compressed air for holding a slidably operable piston forming a magnetic field at a starting position near the lower end of a substantially enclosed cylinder, said cylinder having a load-connected electrical conductor coil surrounding it intermediate its end, said cylinder being affixed in a stationary position;

a gas located in the bottom of said cylinder for lifting said piston to an apex position;

at least one input port disposed through said cylinder approximately midway along said cylinder's length for receiving said gas therethrough into said cylinder;

gas expanding means directed to said gas; and

timing means for synchronizing said expanding means with the lifting and falling of said piston.

4,484,083

ELECTRIC DRIVE TRAIN FOR A VEHICLE

Peter N. Jefferies, 14A Cranley Gardens, South Kensington, London SW7, England

PCT No. PCT/GB80/00135, § 371 Date Apr. 30, 1982, § 102(e) Date Apr. 30, 1982, PCT Pub. No. WO82/00928, PCT Pub. Date Mar. 18, 1982

PCT Filed Sep. 2, 1980, Ser. No. 380,673

Int. Cl.³ B60L *11/14*; H02K *23/60, 17/24*

U.S. Cl. 290—45 **2 Claims**

1. A drive train comprising:

a primary drive,

a rotatable shaft driven by said primary drive,

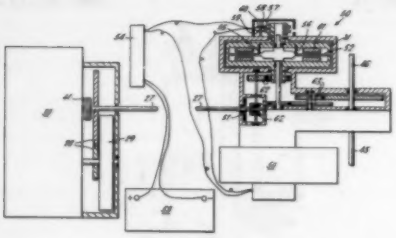
a flywheel rotatable with the shaft for the storage of inertial energy thereby being operable to absorb or rapidly give up angular kinetic energy as required,

clutch means between the primary drive and the flywheel,

an electrically operated transmission comprising an electrical machine having a rotatable magnetic field structure and an independently rotatable armature, one of the field structure and armature being connected to the driven shaft and the other being connected to a rotatable drive shaft, for rotation about a common axis,

an electrical storage cell, and

electrical control means connected with the electrical machine and with the electrical storage cell, for regulating current and thereby controlling the power transmitted to the drive shaft such that, when it is desired to rotate the drive shaft at a speed of rotation less than the speed of rotation of the driven shaft, then the electrical control



means is operated so as to cause excess power to be tapped to the electrical cell to be stored thereby, whereas, when it is desired to rotate the drive shaft at a speed of rotation greater than the speed of rotation of the driven shaft, the electrical control means is operated so as to cause the power required in excess of the power provided by the primary drive to be tapped from the electrical storage cell.

4,484,084

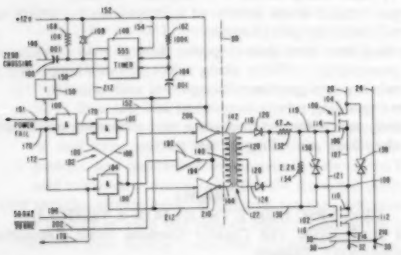
POWER MOSFET TRANSFER SWITCH

Harold H. Cheffer, Longwood, Fla., assignor to NCR Corporation, Dayton, Ohio

Filed Aug. 22, 1983, Ser. No. 525,209

Int. Cl.³ H02J *9/06*

U.S. Cl. 307—64 **13 Claims**



1. In an uninterruptible power supply which includes a first source of A. C. signals and a second source of A. C. signals, a circuit for switching between the first and second source of A. C. signals to supply the A. C. signals to a load including:

a source of first control signals generated in response to the failure of the first source to supply A. C. signals for enabling said second source of A. C. signals to supply the signals to the load;

a source of high frequency clock signals;

switching means for connecting said first source of A. C. signals to the load when enabled;

transformer means for enabling said switching means in response to receiving said clock signals;

and gating means connected to said transformer means and responsive to receiving said first control signals for disabling said transformer means from receiving said clock signals whereby said switching means is disabled from connecting said first source to the load.

4,484,085

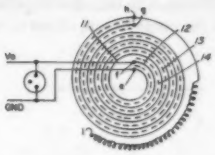
SPIRAL LINE VOLTAGE PULSE GENERATOR CHARACTERIZED BY SECONDARY WINDING

Charles N. Fallier, Jr., Westford, and Joseph M. Proud, Wellesley Hills, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Sep. 29, 1982, Ser. No. 426,427

Int. Cl.³ H03K *3/53*; H01G *4/32*

U.S. Cl. 307—106 **1 Claim**



1. A voltage pulse generator comprised of:

a first conductive strip;

a second conductive strip electrically insulated from said first conductive strip;

said first and second conductive strips coiled in a double arm spiral structure about an axis;

an elongated conductor electrically common to one of said conductive strips, said elongated conductor wound with a plurality of turns about the periphery of said double arm spiral structure;

means for charging said conductive strips to a voltage potential; and

switching means for electrically connecting said conductive strip, thereby causing a voltage wave and a corresponding current wave to propagate along said conducuive strips whereupon an enhanced voltage pulse appears on said elongated conductor;

wherein said conductive strips have approximately equal lengths and said elongated conductor is a wire solenoid about the periphery of said double arm structure, one end of which is electrically connected to the end of one of said conductive strips.

4,484,086

SWITCHING NETWORK

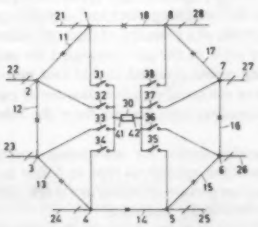
Georg Köppl, Birr, Switzerland, assignor to BBC, Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Sep. 30, 1982, Ser. No. 428,580

Claims priority, application Switzerland, Nov. 12, 1981, 7268/81

Int. Cl.³ H02B *1/24*; H02J *4/00*

U.S. Cl. 307—112 **5 Claims**



1. A switching network comprising at least four junctions connected in the form of an annulus by means of disconnectable current branches, said junctions being divided into at least two groups each containing at least two junctions; and a plural-

ity of bridging branches for selectively connecting each junction in one group with any junction in the other group, said bridging branches having a common load switch and being further comprised of a first plurality of disconnecting switches connected between one terminal of said load switch and respective junctions of said one group and a second plurality of disconnecting switches connected between the other terminal of said load switch and respective junctions of said other group.

4,484,087

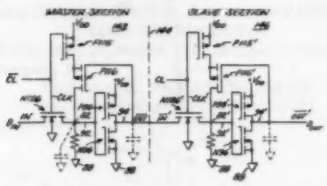
CMOS LATCH CELL INCLUDING FIVE TRANSISTORS, AND STATIC FLIP-FLOPS EMPLOYING THE CELL

Moshe Mazin, and William E. Engeler, both of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 23, 1983, Ser. No. 478,015

Int. Cl.[3] **H03K** *3/356, 19/096, 23/22;* **G11C** *19/28*

U.S. Cl. 307—272 A **12 Claims**



4. An edge-triggered D-type flip-flop having a data input node, a data output node, and a pair of complementary clock input nodes for controlling the transfer of data from said flip-flop data input node to said flip-flop data output node, said flip-flop comprising:

a pair of voltage supply nodes;

a master inverting latch cell and a slave inverting latch cell, each of said latch cells in turn comprising:

a cell data input node;

a cell data storage node;

a cell complementary data output node;

a cell clock input node for selectively enabling or not enabling said cell;

an inverter having an inverter input connected to said cell data storage node and an inverter output connected to said cell complementary data output node, said inverter including a complementary pair of insulated-gate field-effect transistors, one of said inverter transistors having a channel of one conductivity type arranged to selectively electrically connect said cell complementary data output node to one of said voltage supply nodes, the other of said inverter transistors having a channel of the opposite conductivity type arranged to selectively electrically connect said cell complementary data output node to the other of said voltage supply nodes, and said inverter transistors having gate electrodes for controlling the conductances of said respective inverter transistor channels and connected to said cell data storage node;

a first switching element including an insulated-gate field-effect transistor having a channel of the opposite conductivity type and a gate electrode for controlling the conductance of said first switching element transistor channel, a second switching element including an insulated-gate field-effect transistor having a channel of the opposite conductivity type and a gate electrode for controlling the conductance of said second switching element transistor channel, said first switching element transistor channel and said second switching element transistor channel being connected in series in the order recited between said data storage node and said other voltage supply node, said first switching element transistor gate electrode connected to said complementary data output node, said second switch element transistor gate electrode connected to said clock input node;

a high impedance leakage current discharge path electrically connecting said cell data storage node to said one voltage supply node; and

a transmission gate including an insulated-gate field-effect transistor having a channel of the one conductivity type arranged to selectively connect said cell data storage node to said cell data input node, said transmission gate transistor having a gate electrode for controlling the conductance of said transmission gate transistor channel and connected to said cell clock input node;

said master cell data input node being connected to said flip-flop data input node;

said master cell complementary data output node being connected to said slave cell data input node;

said slave cell data output node being connected to said flip-flop data output node; and

said master cell clock input node being connected to one of said pair of flip-flop complementary clock input nodes, and slave cell clock input node being connected to the other of said pair of flip-flop complementary clock input nodes, such that when complementary clock signals are applied to said complementary clock input nodes, respectively, said cells are alternately enabled.

4,484,088

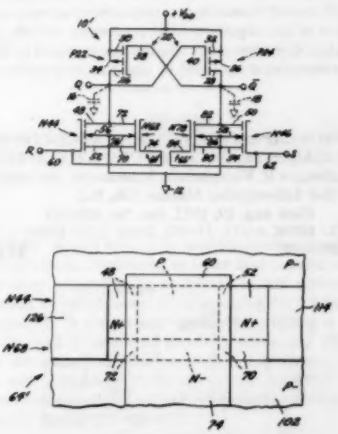
CMOS FOUR-TRANSISTOR RESET/SET LATCH

Moshe Mazin, and William E. Engeler, both of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 4, 1983, Ser. No. 464,098

Int. Cl.[3] **H03K** *3/356;* **H01L** *29/78*

U.S. Cl. 307—279 **2 Claims**



1. In an integrated circuit device formed on a semiconductor substrate, a Reset/Set latch comprising:

a pair of voltage supply nodes;

a first pair of insulated-gate field-effect transistors of one channel conductivity type, each transistor of said first pair of transistors including a source region and a drain region of the one conductivity type formed within the substrate, and including an insulated gate electrode on the substrate configured for inducing a conduction channel between said source region and said drain region of each of said first transistor pair, said source regions of said first transistor pair electrically connected to each other and to one of said pair of voltage supply nodes, said gate electrode of one transistor of said first transistor pair being electrically connected to said drain region of the other transistor of

said first transistor pair, said gate electrode of said other of said first transistor pair being electrically connected to said drain region of said one of said first transistor pair, and said drain regions of said first transistor pair respectively defining first and second complementary data output nodes;

a second pair of insulated-gate field-effect transistors of opposite channel conductivity type, each of said second pair of transistors including a source region and a drain region of the opposite conductivity type formed within the substrate, and including an insulated gate electrode on the substrate configured for inducing a conduction channel between said source region and said drain region of said second transistor pair, said gate electrodes of said second transistor pair respectively defining first and second data input nodes, said source regions of said second transistor pair electrically connected to each other and to the other of said pair of voltage supply nodes, and said drain regions of said second transistor pair respectively electrically connected to respective drain regions of said first transistor pair;

each of said transistors of said second pair being formed within its own well region of the one conductivity type;

a pair of ohmic contacts between said well regions and said other voltage supply node, each of said ohmic contacts including a heavily-doped contact region of the one conductivity type at a surface of the substrate and adjoining the respective well region;

a pair of depletion-mode field-effect transistors of said opposite channel conductivity type, each having an implanted channel region of the opposite conductivity type formed in said semiconductor substrate, said source regions of said second transistor pair respectively serving as source regions of said depletion-mode transistors, said drain regions of said second transistor pair respectively serving as drain regions of said depletion-mode transistors, and the gate of each said depletion-mode transistors connected to the gate of a respective one of said second pair of transistors.

4,484,089

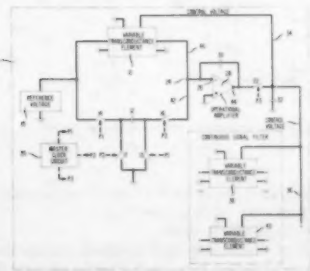
SWITCHED-CAPACITOR CONDUCTANCE-CONTROL OF VARIABLE TRANSCONDUCTANCE ELEMENTS

Thayamkulangara R. Viswanathan, Monroeville, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 19, 1982, Ser. No. 409,363

Int. Cl.³ H03K *3/013, 17/693;* **H03F** *1/30;* **H03G** *3/30*

U.S. Cl. 307—297 **13 Claims**



1. Apparatus for maintaining the transconductances of variable transconductance elements substantially temperature-insensitive, said apparatus comprising

a primary variable transconductance element having a transconductance G_{VTE},

a switched-capacitor circuit having a conductance C/T, where C is the capacitance of the switched capacitor and T is the switching period thereof,

means for providing a reference voltage to said primary element and to said circuit,

and means responsive to currents respectively supplied by said element and said circuit for generating a control voltage which is applied to said element to maintain said currents equal whereby G_{VTE} is determined by C/T.

4,484,090

PULSE GENERATOR WITH SHAPED MAGNETIC FIELD

John R. Wiegand, Valley Stream, N.Y., and John E. Opie, Stony Creek, Conn., assignors to Echlin Manufacturing Company, Branford, Conn.

Continuation-in-part of Ser. No. 123,703, Feb. 22, 1980, Pat. No. 4,309,628. This application Jan. 4, 1982, Ser. No. 336,730

Int. Cl.³ H03K *3/45*

U.S. Cl. 307—419 **4 Claims**

1. A pulser for use in the generation of a pulse in response to a changing magnetic field comprising:

a Wiegand wire,

means to establish a magnetic field external of said wire,

means to couple said field to a central portion of said Wiegand wire,

means to vary the magnitude of the field coupled to the said central portion of said Wiegand wire sufficiently to cause a change of state of said wire as said magnitude of said field is varied,

the configuration of said external field being such that the ends of said Wiegand wire are subjected to an external field of relatively minimal absolute magnitude in an axial direction when said wire switches state under the influence of said external field.

4,484,091

EXCLUSIVE-OR CIRCUIT

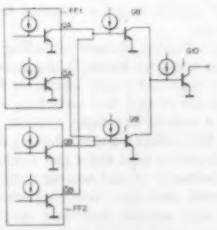
Katsumi Nagano, Shimonoseki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jul. 9, 1982, Ser. No. 396,660

Claims priority, application Japan, Jul. 10, 1981, 56-107688

Int. Cl.³ H03K *19/21, 19/091*

U.S. Cl. 307—471 **4 Claims**



1. An exclusive-OR circuit comprising:

a first flip-flop circuit of an open collector type for providing

first and second complementary outputs in response to a pulse input;

a second flip-flop circuit of an open collector type for providing first and second complementary outputs in response to a pulse input;

an open collector type first inverter circuit having an input and an output, the input being connected to said first output of said first flip-flop circuit and to said second output of said second flip-flop circuit;

an open collector type second inverter circuit having an input and an output, the input being connected to said second output of said first flip-flop circuit and to said first output of said second flip-flop circuit; and

output means connected to the outputs of said first and second inverter circuits for providing a logical NAND function of the output signals of said first and second inverter circuits.

4,484,092

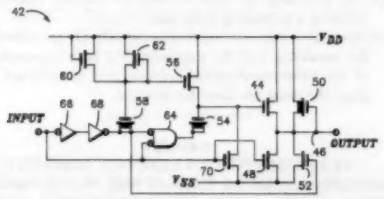
MOS DRIVER CIRCUIT HAVING CAPACITIVE VOLTAGE BOOSTING

Jules D. Campbell, Jr., Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 22, 1982, Ser. No. 360,123

Int. Cl.³ H03K *17/06, 17/284, 17/687*

U.S. Cl. 307—578 **10 Claims**



1. In an MOS driver circuit comprising:

active load means coupled between an output and a first supply voltage terminal, for coupling said output to said first supply voltage terminal in response to a driver voltage;

switching means coupled between said output and a second supply voltage terminal, for coupling said output to said second supply voltage terminal in response to an input signal;

a capacitive voltage booster circuit comprising:

a first capacitor coupled to said active load means, for developing said driver voltage on a first electrode thereof;

a second capacitor for developing a precharge voltage on a first electrode and having a second electrode coupled to said input signal;

a first precharge device controlled by said precharge voltage and coupled between said first supply voltage terminal and the first electrode of said first capacitor, for precharging the first electrode of said first capacitor to a first supply voltage in response to said input signal changing from a first predetermined level to a second predetermined level;

a second precharge device coupled between said first supply voltage terminal and the first electrode of said second capacitor, for precharging said second capacitor to substantially said first supply voltage;

a clamping device coupled between said first supply voltage terminal and said precharge voltage, for limiting the range of said precharge voltage which is coupled to said first precharge device;

control means coupled to said input signal, to the second electrode of said second capacitor and to said first and second supply voltage terminals, for switching the second electrode of said first capacitor between said first supply voltage and a second supply voltage in response to a change of level in said input signal, whereby said driver voltage is substantially boosted above said first supply voltage;

delay means coupled to said input signal, to said first and second supply voltage terminals, to said second electrode of said second capacitor, and to said control means, for allowing said precharge voltage to decrease and thereby substantially disable said first precharge device before said driver voltage is boosted; and

disabling means coupled to said second supply voltage terminal, to said first capacitor, and to said first precharge device and said load means, for discharging the first electrode of said first capacitor to said second supply voltage in response to said input signal changing from said second level to said first level.

4,484,093

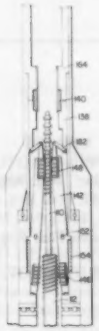
LINEAR MOTION DEVICE AND METHOD FOR INSERTING AND WITHDRAWING CONTROL RODS

Jay E. Smith, Pittsburgh, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 8, 1982, Ser. No. 447,850

Int. Cl.³ G21C *7/08*

U.S. Cl. 310—14 **13 Claims**



1. A linear motion device, for independently controlling two sets of activators, comprising an inner lead member and outer lead member adapted to be connected to said activators, first and second threaded means for controlling the position of said lead members, a rocker arm assembly including a block to carry the load of said lead members when said rocker arm moves downward to pivot said first and second threaded means into engagement with one or the other of said lead members and a magnetically activated moveable slug for activating said rocker arm assembly.

4,484,094

ELECTRIC SMALL-SIZE MOTOR COMPRISING AN ARMATURE SECURED WITH PLASTIC MATERIAL

Rolf Ade; Heinz Heimann, both of Bietigheim-Bissingen; Wolfgang Kofink, Aichwald-Lobenrot, and Hans Prohaska, Bietigheim-Bissingen, all of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Sep. 6, 1983, Ser. No. 529,580

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1982, 3243212

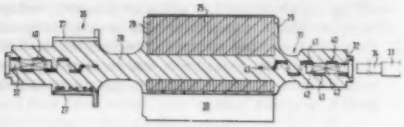
Int. Cl.³ H02K *1/04*

U.S. Cl. 310—43 **19 Claims**

1. An electric small-size motor comprising an armature, whose shaft (**31**), laminated core (**25**) and conmutator (**26**) are secured relative to one another in an integral plastics part (**28**) which also insulates the laminated core (**25**) from the windings,

characterised in that at least from one end of the shaft (31) the latter is provided with a receiver (32) whose cross-section deviates from the shape of a circle, into which another shaft (33) with a matching cross-section can engage;

wherein the major part of the armature shaft (31) consists of plastics material being part of the plastics part (28) and is reinforced by an intermediate metal ply (25, 40, 50, 55, 56); and



wherein in the longitudinal direction of the armature shaft (31) the intermediate metal ply is a sheet metal (40) folded like meanders, which sheet metal is provided with apertures (44) at least in its portions (32) standing substantially perpendicularly on the longitudinal direction of the receiver (32).

4,484,095

STEPPING MOTOR

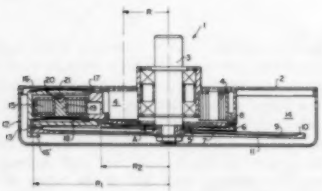
Gerhard Neumann, Markdorf, Fed. Rep. of Germany, assignor to Dornier System GmbH, Fed. Rep. of Germany

Filed Dec. 14, 1982, Ser. No. 449,784

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1982, 3207101

Int. Cl.³ H02K 37/00

U.S. Cl. 310—49 R 9 Claims



1. In a stepping motor composed of a stator housing containing annularly arranged electromagnets or coils with pole pieces and a magnetically conducting rotor composed of a flexible membrane solidly connected to an annular armature plate and connected to a drive shaft axially supported within the stator housing, said rotor being provided at its periphery with a toothed rim,

the improvement comprising, in addition to the rotor (5), a second rotor (11) mounted on the drive shaft (3) and being composed of a flexible membrane (11') including a ring (9) provided with a toothed rim (10) connected to said membrane (11'), said toothed rim (10) corresponding to a detent toothed rim (13) fixed to the stator housing (2), and the rotor (11) being so actuated by an electronically controlled indexing coil (15) located between the electromagnets or coils (4) that the rotor (11) is indexed or fixed in place according to the pitch of the detent toothed rim (13).

4,484,096

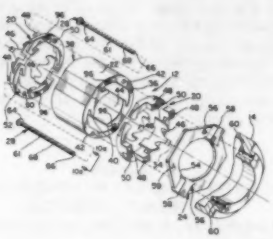
FIELD SUBASSEMBLY FOR AN ELECTRIC MOTOR

William D. Sauerwein, Westminster; John E. Dibbern, Jr., Street, both of Md.; Frank J. O'Hara, Hanover, Pa., and Robert G. Moores, Jr., Reisterstown, Md., assignors to Black & Decker Inc., Newark, Del.

Filed Aug. 11, 1983, Ser. No. 522,011

Int. Cl.³ H02K 3/46

U.S. Cl. 310—260 17 Claims



1. A subassembly element for a field subassembly including a fastener having a reduced-diameter portion and an enlarged-diameter portion, comprising:

(a) an insulating member formed of resilient material and defining a mounting hole; and

(b) fastener compensating means operatively associated with the mounting hole for expanding the hole to permit entry of the enlarged-diameter portion and to contract to engage the reduced-diameter portion.

4,484,097

FLAT COIL FOR AN ELECTRIC MACHINE

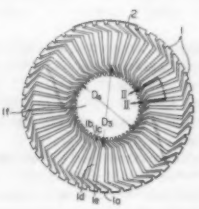
Kenji Kanayama, Kariya; Hidekuni Sugi, Nagoya; Saburo Ito, Kariya, and Masatoshi Suzuki, Nishio, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 6, 1983, Ser. No. 501,760

Claims priority, application Japan, Jun. 8, 1982, 57-99028; Jul. 13, 1982, 57-122525; Jul. 13, 1982, 57-122526

Int. Cl.³ H02K 1/22

U.S. Cl. 310—268 7 Claims



1. A flat coil for use in a rotary electric machine having a rotary shaft, said coil comprising a relatively thin annular base of an electrically insulating material having opposite annular end faces and outer and inner peripheral edges, said inner peripheral edge defining a central opening for said shaft, and first and second annular rows of generally radially extending and circumferentially spaced axially thin segments of an electrically conductive material, said first and second annular rows of segments being secured to said annular end faces of said base, the segments of said first and second annular rows having radially outer and inner ends electrically connected adjacent to said outer and inner peripheral edges of said base to form at least one winding extending substantially spirally around said annular base, each of said segments including a non-effective

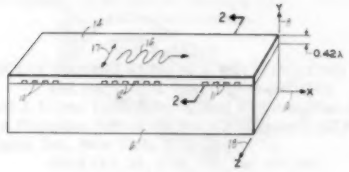
section adjacent to said radially inner end of said segment and an effective section adjacent to and radially outward of said non-effective section, wherein said non-effective section adjacent to said radially inner and of each segment has a first mean thickness measured in the axial direction of said coil, said effective section has a second mean thickness measured in the axial direction of said coil, and said first mean thickness is greater than said second mean thickness.

4,484,098

ENVIRONMENTALLY STABLE LITHIUM NIOBATE ACOUSTIC WAVE DEVICES

Donald E. Cullen, Manchester; Thomas W. Grudkowski, Glastonbury, and Gerald Meltz, Avon, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 19, 1983, Ser. No. 562,629
Int. Cl.³ H03H 9/25
U.S. Cl. 310—313 A **2 Claims**



1. An acoustic wave device, comprising:
a lithium niobate substrate having a principal plane cut at an angle of zero degrees with respect to its Y crystallographic axis with propagation in the X direction;
electroacoustic transducer metallization disposed on said surface; and
a surface layer of amorphous silicon dioxide disposed on said surface and over said metallization, said layer having a thickness of substantially 0.42 wavelengths of the acoustic wave in said device.

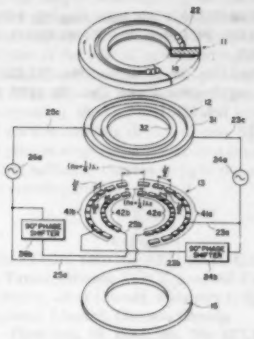
4,484,099

PIEZOELECTRIC VIBRATION WAVE MOTOR WITH MULTIPLE TRAVELING WAVE GENERATING MEMBERS

Tohru Kawai; Makoto Katsuma, both of Kawasaki; Hiroyasu Murakami, Tokyo; Akira Hiramatsu, and Naoya Kaneda, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 12, 1983, Ser. No. 560,527
Claims priority, application Japan, Dec. 21, 1982, 57-224398
Int. Cl.³ H01L 41/08
U.S. Cl. 310—317 **5 Claims**

1. A vibration wave motor comprising:
first electrostrictive elements arranged or polorized phase-differentially;
second electrostrictive elements arranged or polarized phase-differentially;
a first vibration member for generating a travelling vibration wave when voltages having a phase difference are applied to said first electrostrictive elements;
a second vibration member for generating a travelling vibration wave when voltages having a phase difference are applied to said second electrostrictive elements; and



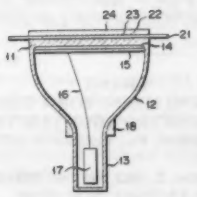
a movable member press-contacted to and friction-driven by said first vibration member and said second vibration member.

4,484,100

CATHODE-RAY TUBE FOR PROJECTOR HAVING HEAT CONDUCTION AND RADIATING MEANS

Takeo Sato, Fukaya, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 11, 1982, Ser. No. 348,076
Claims priority, application Japan, Feb. 12, 1981, 56-18047
Int. Cl.³ H01J 7/24, 29/86
U.S. Cl. 313—44 **5 Claims**



1. A cathode-ray tube for a projector comprising:
a tube envelope including a faceplate having an inner surface and an outer surface;
a phosphor screen provided on said inner surface of said faceplate, said phosphor screen having an effective area to be scanned by an electron beam;
a mesh-like or striped heat conduction member disposed on said outer surface of said faceplate corresponding to said effective area of said phosphor screen; and
a heat radiator secured on an outer side of said faceplate, said heat radiator being conductively in contact with said heat conduction member.

4,484,101

SPARK PLUG

Jack K. Ibbott, 17-7, Nishiazabu 4-chome, Minato-ku, Tokyo 106, Japan

PCT No. PCT/JP80/00329, § 371 Date Aug. 12, 1981, § 102(e) Date Aug. 12, 1981, PCT Pub. No. WO81/01918, PCT Pub. Date Jul. 9, 1981

PCT Filed Dec. 25, 1980, Ser. No. 293,226

Claims priority, application Japan, Dec. 28, 1979, 54-173877

Int. Cl.³ H01T *13/20*

U.S. Cl. 313—142 **7 Claims**

1. A spark plug for an internal combustion engine and comprising:

a threaded cylindrical outer metal body having an axial end;

a central electrode positioned concentrically within said metal body;

a dielectric member positioned between said metal body and said central electrode and leaving exposed an end portion of said central electrode;

a generally L-shaped ground electrode including a first portion integrally connected to and extending from said axial end of said metal body and a second portion integral with and extending from said first portion toward said central electrode in a generally radial direction within a plane containing the longitudinal axis of said central electrode, said second portion being spaced from said central electrode and defining therewith a spark gap; and

means for, upon the occurrence of ignition between said central electrode and said ground electrode at said spark gap, deflecting the resultant flame front into a strong swirling movement into a combustion chamber into which the spark plug is adapted to extend, said deflecting means comprising a generally planar surface of said second portion of said ground electrode, said planar surface being inclined at an angle of approximately 25° to 60° with respect to said plane and generally confronting said spark gap.

4,484,102

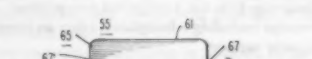
STRENGTHENING MEANS FOR A DEEP-DRAWN IN-LINE ELECTRON GUN ELECTRODE

John R. Hale, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 2, 1982, Ser. No. 353,980

Int. Cl.³ H01J *29/50, 29/46*

U.S. Cl. 313—417 **4 Claims**



1. In an electron gun assembly having means for generating and directing a plurality of electron beams along spaced, coplanar beam paths, said generating and directing means being spaced along a plurality of insulative support means, said generating and directing means including at least one substantially cup-shaped member having a base portion, a supporting flange portion substantially parallel to said base portion and a sidewall extending therebetween, said supporting flange portion including attachment means to facilitate securing said member to said insulative support means, the improvement wherein

said sidewall includes strengthening means formed therein and projecting outwardly at an acute angle therefrom and extending into said supporting flange portion of said cup-shaped member adjacent to said attachment means for increasing the structural rigidity of said member.

4,484,103

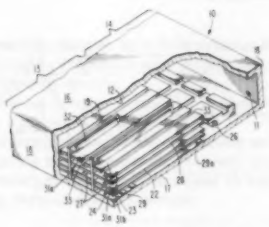
COLOR SELECTION ELECTRON BEAM GUIDE ASSEMBLY FOR FLAT PANEL DISPLAY DEVICES

Thomas L. Credelle, Lawrenceville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 23, 1982, Ser. No. 422,450

Int. Cl.³ H01J *29/74*

U.S. Cl. 313—422 **7 Claims**



1. An electron beam guide assembly for a flat panel display device having a frontwall supporting a multimaterial display screen for emitting color light when struck by electrons, a color selection electrode, a backplate, a plurality of electron beam propagation channels for propagating electron beams parallel to said screen, extraction means for directing said beams toward toward said screen, and deflection means for deflecting said beams transversely of said channels, said beam guide assembly including an improved acceleration mesh for accelerating electrons toward said screen comprising:

a plurality of electrically separated conductive members arranged longitudinally along said channels, said beams passing between said members whereby said deflection means and said conductive members simultaneously bend said beams to pass through said color selection electrode to strike a selected one of said screen materials and scan said beams transversely across said channels to produce line segments across said display screen.

4,484,104

SOLAR-POWERED LIGHTING SYSTEM

Peter O'Brien, 7 Wilga Grove, Ashmore Village, Southport, Australia

PCT No. PCT/AU80/00075, § 371 Date Jun. 1, 1982, § 102(e) Date Jun. 1, 1982, PCT Pub. No. WO82/01270, PCT Pub. Date Apr. 15, 1982

PCT Filed Oct. 6, 1980, Ser. No. 387,837

Int. Cl.³ H02P *3/00*

U.S. Cl. 315—86 **18 Claims**

1. A solar-powered lighting system for illuminated signs and hoardings including:

a plurality of solar cells (**20**) arranged in an array (**17**) to receive solar energy;

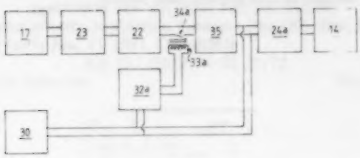
battery means (**22**) to store electrical energy generated by the solar cells (**20**);

light means (**14**) operable by the electrical energy;

timing means (**32**) operable to cause the sign (**10**) to be illuminated for a predetermined period;

a direct current/alternating current inverter interposed between said battery means (**22**) and said light means (**14**);

an alternating current mains electricity supply (**30**) connected to said light means (**14**);



a switch (**32***a*) operable by said mains supply to connect said battery mean (**22**) to said light means (**14**) for a predetermined period or when said mains supply (**30**) is switched off; and

sensing means (**24**) operable to control the illumination of said light means (**14**) dependent on the light intensity in the vicinity of the sign or hoarding (**10**).

4,484,105

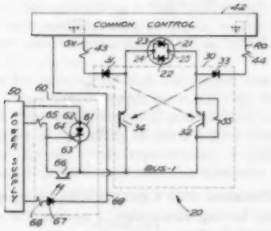
CIRCUIT FOR SELECTIVELY EXCITING ONE OF A PAIR OF LIGHT EMITTING DIODES

Richard J. Kriete, Little Ferry; Rafael R. Orsini, Fort Lee, and Leon Weinglass, Edison, all of N.J., assignors to AT&T Technologies, Inc., New York, N.Y.

Filed Oct. 28, 1982, Ser. No. 437,245

Int. Cl.[3] **H01J** *1/60*

U.S. Cl. 315—133 **4 Claims**



1. A circuit for selectively lighting one of a pair of light emitting diodes arranged in a parallel configuration so as to be oppositely poled to conduct current in opposite parallel paths, said circuit comprising:

a first photon-responsive device connected to one side of the pair of light emitting diodes;

a second photon-responsive device connected to an opposite side of the pair of light emitting diodes;

means for connecting a current source with both photon-responsive devices;

shunting means connecting across the first photon-responsive device having a resistance value which is substantially greater than the resistance of the first photon-responsive device when it is conducting;

a first photon-emitting device optically coupled with the first photon-responsive device and connected to the opposite side of the pair of light emitting diodes;

a second photon-emitting device optically coupled with the second photon-responsive device and connected with the one side of the pair of light emitting diodes; and

means for selectively connecting ground to the first or second photon-emitting devices such that when ground is connected to the first photon-emitting device current flows from the current source connecting means through the shunting means and the first photon-emitting device driving the first photon-emitting device to emit light to excite the optically coupled first photon-responsive device into conduction thereby producing sufficient current to light one of the pair of light emitting diodes and when ground is connected to the second photon-emitting device current flows through the shunting means and the second photon-emitting device driving the optically coupled second photon-emitting device to emit light to excite the second photon-responsive device into conduction thereby producing sufficient current to light the other of the pair of light emitting diodes.

4,484,106

UV RADIATION TRIGGERED RAIL-GAP SWITCH

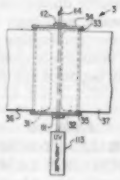
Roderick S. Taylor, Ottawa; Kurt E. Leopold, Carp, and A. John Alcock, Ottawa, all of Canada, assignors to Canadian Patents & Development Limited, Ottawa, Canada

Filed Sep. 10, 1982, Ser. No. 417,177

Claims priority, application Canada, May 14, 1982, 403028

Int. Cl.[3] **H01J** *7/24*

U.S. Cl. 315—150 **27 Claims**



1. A rail-gap switch for applying a voltage from a high voltage source to a low impedance load comprising:

first and second parallel elongated electrodes spaced to have an essentially constant width s gap between the electrodes, the gap having a gap length along the electrodes substantially greater than the gap width between the electrodes, the first electrode adapted to be connected to the high voltage source and the second electrode adapted to be connected to the low impedance load whereby one of the electrodes is positive with respect to the other electrode, the electrodes each having a cross-section providing a field enhancement factor $f \leqq 1.5$;

enclosure means, the electrodes being located within the enclosure means, and the enclosure means containing a gas mixture for maintaining a voltage holdoff between the electrodes; and

UV radiation source means for directing a narrow uniform cross-section beam of radiation in the gap along the gap length at a distance less than 0.2s from the positive electrode and substantially parallel to the pair of electrodes for initiating multichannel breakdown along the length of the gap between the electrodes.

4,484,107

DISCHARGE LAMP LIGHTING DEVICE AND SYSTEM

Isao Kaneda, Otsu, Japan, assignor to NEC Home Electronics, Ltd., Osaka, Japan

Filed Feb. 18, 1982, Ser. No. 349,709

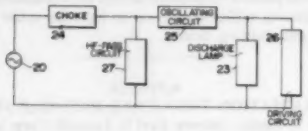
Claims priority, application Japan, Jul. 13, 1981, 56-109632; Jul. 13, 1981, 56-109633

Int. Cl.[3] **H05B** *37/02*

U.S. Cl. 315—176 **16 Claims**

1. An operating circuit system for discharge lamp means in a lighting device energized by a low frequency AC source, comprising frequency conversion means providing a high frequency power supply connected in series with said AC source for converting a low frequency current from said AC

source into a high frequency current for energizing said lamp means by supplying said high frequency current to said lamp means, and reignition means connected for applying a reignition voltage to said lamp means for reignition of said lamp means during a given period including an initial part of each half cycle of said AC source, whereby a low frequency voltage component and a high frequency voltage component are applied in an overlapping relationship to said lamp means for continuously emitting light with an improved light efficacy, said system further comprising an inductive choke (**24**) operatively connected in said circuit system for limiting the current of said low frequency voltage component supplied to said discharge lamp means, and a high frequency pass circuit operatively connected in said circuit system for supplying said high frequency voltage component to said discharge lamp in each half cycle of said AC source during the entire lit condition of said discharge lamp means, said high frequency pass circuit avoiding said inductive current limiting means as an impedance for said high frequency voltage component, whereby said high frequency power supply becomes the primary power supply.

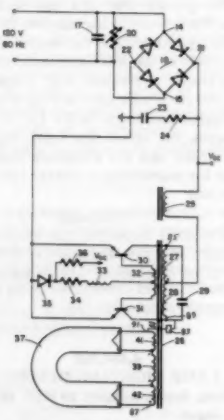


4,484,108

HIGH FREQUENCY BALLAST-IGNITION SYSTEM FOR DISCHARGE LAMPS

Edward H. Stupp, Spring Valley; Mark W. Fellows, Monroe, both of N.Y., and Leonard R. Guarnera, New Fairfield, Conn., assignors to North American Philips Corporation, New York, N.Y.

Filed Aug. 2, 1982, Ser. No. 404,021
Int. Cl.³ H05B *41/29*
U.S. Cl. 315—219 **14 Claims**



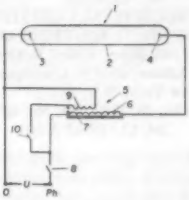
1. A high-frequency ballast circuit for starting and operating an electric discharge lamp from a low frequency AC power source comprising, a high frequency oscillator-inverter circuit adapted to be energized from said low frequency AC power source, a leakage reactance transformer having a primary winding coupled to the oscillator-inverter, a secondary winding and at least one heater winding, a capacitor coupled to the transformer primary winding to form a resonant circuit that determines the oscillation frequency of said oscillator-inverter, means for coupling the secondary winding and the heater winding to an electric discharge lamp to provide a preheat time period for the lamp, and impedance means electrically connecting said primary and secondary windings together in additive phase so as to produce a sudden increase in the amplitude of ignition voltage developed across the secondary winding at the end of said preheat time period.

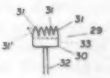
4,484,109

IGNITION SYSTEM FOR GAS DISCHARGE LAMPS

Johann Buser, Ringstrasse 14, 4414 Füllinsdorf, Switzerland

Filed Nov. 9, 1981, Ser. No. 319,660
Claims priority, application Fed. Rep. of Germany, Nov. 18, 1980, 3043526
Int. Cl.³ H05B *41/18*; H01J *1/30*
U.S. Cl. 315—290 **10 Claims**





1. In combination with a gas discharge lamp such as a fluorescent lamp having electrodes, a system for effecting cold start ignition of the lamp comprising:

A first means including a current-limiting coil in series with a main switch which when actuated serves to apply across the electrodes through said current limiting coil a relatively low voltage derived from a standard a-c power line; and

B second means including a starter coil in series with an ignition switch, said starter coil being inductively coupled to the current-limiting coil to define therewith a step-up transformer, said ignition switch being momentarily actuated when the main switch is actuated to apply said voltage to said starter coil to produce in said current-limiting coil an ignition voltage which is applied across the electrodes for a brief interval at a raised level sufficient to effect an immediate arc discharge, the lamp thereafter being operated by said low voltage, said main switch and said ignition switch being mechanical switches that are mechanically interlinked, whereby actuation of the main switch effects momentary actuation of the ignition switch.

2. The combination as set forth in claim 1, wherein said electrodes are provided with an electronic emissive substance and have a structure provided with discharge and emitting spikes which are bent outwardly relative to the cental axis of the electrodes.

4,484,110

MONOLITHIC INTEGRATED VERTICAL-DEFLECTION CIRCUIT FOR TELEVISION SETS WITH TANGENT-CORRECTED, LINE-FREQUENCY-DERIVED DIGITAL SIGNAL GENERATION

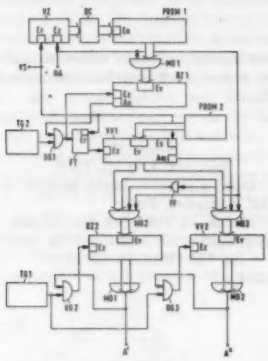
Gerhard Achtstaetter, Gundelfingen, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Continuation of Ser. No. 326,638, Dec. 2, 1981, abandoned. This application Jun. 17, 1983, Ser. No. 505,197

Claims priority, application European Pat. Off., Dec. 8, 1980, 80107715.7; Jun. 16, 1981, 81104620.0

Int. Cl.³ H01J *29/70, 29/72*

U.S. Cl. 315—364 **35 Claims**



1. A deflection circuit comprising:

first means for generating a sequence of pulse width modulated signals in response to a sequence of first digital words;

second means for generating a first one of said first digital words in each said sequence of digital words from a second digital word representative of an initial value of a characteristic curve;

third means for generating each successive one of said sequence of first digital words by modifying the previous one of said first digital words in accordance with a predetermined one of a plurality of third digital words, each of said third digital words representing a predetermined slope value of a portion of said characteristic curve.

4,484,111

SIGNAL AMPLIFIER FOR A SIGNAL RECORDING DEVICE WITH MAGNETIC DEFLECTION

Richard H. McMorrow, Jr., Lincoln, and Geoffrey Haigh, Boxford, both of Mass., assignors to Analogic Corporation, Wakefield, Mass.

Continuation of Ser. No. 186,536, Sep. 12, 1980, abandoned. This application Sep. 8, 1982, Ser. No. 415,979

Int. Cl.³ H01J *29/70, 29/76*

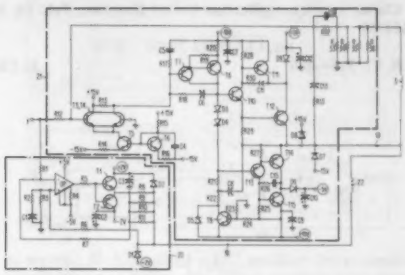
U.S. Cl. 315—397 **7 Claims**

1. Apparatus for limiting the power necessary to linearly drive a magnetic deflection coil in accordance with an input signal having a wide range of frequency components, comprising:

a source of differing supply voltages;

a voltage-to-current converting amplifier coupled to and powered by one of the supply voltages from said source for amplifying said input signal, said voltage-to-current converting amplifier adapted to be connected to said deflection coil so that said coil receives its main current from said voltage-to-current converting amplifier, said voltage-to-current converting amplifier having a predetermined input signal voltage range corresponding to input signals having components in a relatively low frequency range, said input signal range being determined by the supply voltage coupled to said voltage-to-current amplifier; and,

a multi-step voltage amplifier for amplifying said input signal, said multi-step voltage amplifier coupled to and powered by a number of different supply voltages from said source and providing an output voltage capable, by virtue of the provision of different supply voltages, of swinging between different voltage level steps corresponding to different input signal voltage ranges which correspond to input signals having frequency components higher than



those associated with the input signal voltage range of said voltage-to-current converter, said different input signal voltage ranges being higher than said predetermined input signal voltage range, said multi-step voltage amplifier adapted to be connected to said deflection coil for driving said deflection coil such that current through the coil generated as a result of multi-step amplifier drive is added to the current from said voltage-to-current converting amplifier, each step being activated when said input signal voltage exceeds the limit of the next lower input signal voltage range.

4,484,112

PROTECTION DEVICE FOR THE HORIZONTAL SCANNING CONTROL OF A DISPLAY SCREEN

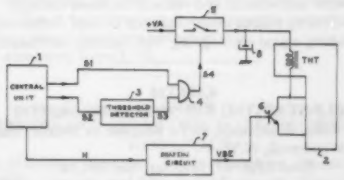
Michel Facon, and Robert Julien, both of Colombes, France, assignors to Thomson CSF Telephone, Colombes, France

Filed Mar. 22, 1983, Ser. No. 477,731

Claims priority, application France, Mar. 26, 1982, 82 05243

Int. Cl.³ H01J *29/70, 29/76*

U.S. Cl. 315—399 **7 Claims**



1. A protection device for the horizontal scanning control of a display screen comprising a horizontal scanning circuit incorporating an extra high voltage transformer, said control making it possible to activate the horizontal scanning circuit on receiving the sync signal, wherein the device comprises a central unit for supplying a first, a second and a third signal; a threshold detector receiving the second signal supplied by the central unit and delivering a fourth signal which is a function of the level of the second signal; an AND gate receiving on a first input the first signal supplied by the central unit, receiving on a second input the fourth signal and delivering a fifth signal; a shaping circuit receiving the third signal generated by the

central unit, for reshaping it and transmitting a reshaped signal to the scanning control; and a switch receiving the fifth signal which, as a function of its state, making it possible to control the opening or closing of the switch and thus making it possible to supply or not supply the horizontal scanning circuit.

4,484,113

REGULATED DEFLECTION CIRCUIT

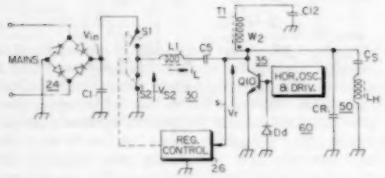
Peter E. Haferl, Adliswil, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Dec. 22, 1981, Ser. No. 333,610

Claims priority, application United Kingdom, Feb. 16, 1981, 8104750

Int. Cl.³ H01J *29/70, 29/76*

U.S. Cl. 315—408 **35 Claims**



1. A deflection circuit comprising:

a deflection winding;

a deflection generator coupled to said deflection winding for generating scanning current in said deflection winding during a deflection cycle, said deflection generator including a retrace capacitance coupled to said deflection winding for forming a retrace resonant circuit therewith to produce a retrace pulse voltage during a retrace interval of said deflection cycle;

an inductance;

a second capacitance coupled to said inductance for forming a second resonant circuit therewith, said second resonant circuit being coupled to said deflection generator;

a source of energy; and

switching means coupled to said source and to said second resonant circuit in a self-oscillating configuration, said switching means being responsive to a deflection rate switching signal for storing a controllable amount of energy from said source in said second resonant circuit, said retrace pulse voltage being applied to said second resonant circuit to provide for the transfer of energy between said second and retrace resonant circuits,

said switching means in the absence of said deflection rate switching signal undergoing free-running oscillation.

4,484,114

SELF-STARTING BRUSHLESS DC MOTOR

John W. Ebbs, Woodstock, N.Y., assignor to Rotron, Incorporated, Woodstock, N.Y.

Filed Mar. 4, 1982, Ser. No. 354,747

Int. Cl.³ H02P *1/18*

U.S. Cl. 318—138 **11 Claims**

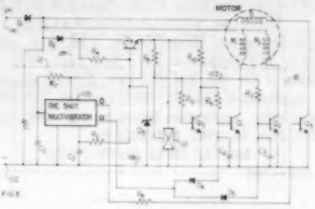
1. A self-starting DC motor comprising:

main windings wound on a startor for magnetizing main stator poles;

a rotor cooperating with said stator, and having at least one cogged position at rest;

a starting winding wound on said stator, and angularly offset from said main windings, for establishing one secondary stator field, whereby said rotor moves away from said cogged position;

timing means for energizing said starting winding prior to energization of said main windings and deenergizing said starting winding and energizing said main windings after said rotor has been positioned away from said cogged position; and



means for sensing the position of said rotor and sequentially energizing said main windings for continuous operation of the motor.

4,484,115

BRUSHLESS MOTOR

Yoshiteru Takahashi, Yamakita, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 28, 1982, Ser. No. 392,468

Claims priority, application Japan, Jul. 14, 1981, 56-110170

Int. Cl.³ H02K *29/02, 23/00*

U.S. Cl. 318—254 **4 Claims**

1. A brushless motor comprising seven or more armature windings mounted on a stator, field magnets mounted on a rotating shaft to rotate therewith with respect to the armature windings, a plurality of semi-conductor commutating devices each being connected to one of the armature windings and having position detecting elements which detect the polarity of the field magnet directly opposite to each armature winding, said each commutating device controlling the direction of the electric current to be fed to a respective armature winding according to the polarity detected by a respective position detecting element,

characterized in that said armature windings are connected together at one end thereof and are connected to a respective commutating device at the other end thereof whereby the motor simultaneously energizes a majority of the armature windings thereby enhancing the produced torque.

4,484,116

PRIME MOVER AND METHOD OF OPERATING AN ELECTRICAL SWITCH

Harold B. Ellicott, Morrison, and James P. Frank, Rock Falls, both of Ill., assignors to General Electric Company, Fort Wayne, Ind.

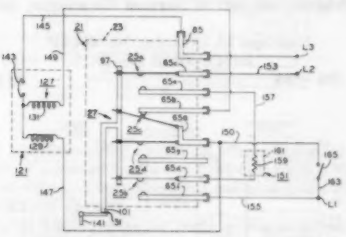
Division of Ser. No. 759,875, Jan. 17, 1977, Pat. No. 4,160,885. This application Apr. 2, 1979, Ser. No. 25,911

Int. Cl.³ G05B *5/00;* **H01H** *35/10;* **H02K** *11/00;* **H02P** *5/30*

U.S. Cl. 318—325 **17 Claims**

1. In a prime mover adapted to drive an appliance or the like, an electrical switch device having a housing mounted to the

prime mover, a switch means accommodating chamber within the housing, a plurality of switch means in the chamber and adapted for controlling across a pair of opposite sides of a power source the energization and deenergization of a winding circuit in the prime mover and also of an auxiliary circuit associated with the driven appliance, each of the switch means of the switch means plurality having a pair of switch members with at least one of the switch members being movable between a circuit making position engaged with the other of the switch members and a circuit breaking position disengaged from the other switch member, respectively, a plurality of terminals associated with the housing, at least some terminals of the terminal plurality respectively having a switch member supporting section within the chamber and an electrical connector section exteriorly of the chamber, means movable in the electrical switch device for engaging and actuating the switch means to effect the movement of the at least one switch members between the circuit making and breaking positions thereof, respectively, and the prime mover also having a speed actuated system associated therewith and with the electrical switch device and operable generally in response to the occurrence of a preselected speed of the prime mover to effect the at least one switch member movement of the engaging and actuating means; the improvement comprising a first terminal pair of the at least some terminals having the supporting sections thereof within the chamber supporting the at least one switch member and the other switch member of a one of the switch



means of the switch means plurality and with the electrical connector sections of said first terminal pair being connected in series circuit relation between the auxiliary circuit and one of the opposite sides of the power source, respectively, a second terminal pair of the at least some terminals having the supporting sections thereof within the chamber supporting the at least one switch member and the other switch member of another of the switch means and with the electrical connector sections of said second terminal pair being connected in series circuit relation between the auxiliary circuit and the other of the opposite sides of the power source, respectively, a third terminal pair of the at least some terminals having the supporting sections thereof within the chamber supporting the at least one switch member and the other switch member of a third switch means and with the electrical connector sections of said third terminal pair being connected in electrical circuit relation between the winding circuit of the prime mover and one of the one and other opposite sides of the power source, respectively, the at least one switch member of said one switch means, said another switch means and said third switch means being movable between the circuit making and breaking positions thereof in response to the speed actuated system movement of the engaging and actuating means upon the occurrence of the preselected speed of the prime mover and the engaging and actuating means including means movable in the chamber for camming the at least one switch member of at least said one switch means and said another switch means between the circuit making and breaking positions thereof, respectively.

4,484,117

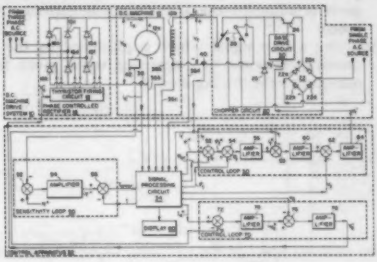
MICROPROCESSOR-BASED CONTROL APPARATUS FOR A DIRECT CURRENT MACHINE DRIVE SYSTEM

Bimal K. Bose, Latham, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 124,346, Feb. 25, 1980, abandoned. This application Dec. 24, 1981, Ser. No. 334,119

Int. Cl.[3] **H02P** *5/06*

U.S. Cl. 318—338 **4 Claims**



1. A method of controlling a DC machine drive supplied with power from an external source during steady state operation using a microcomputer having stored machine constants, the machine drive having an armature current control loop and an air gap flux control loop, said method comprising the steps of:

(1) measuring armature and field voltages and currents, and machine speed;

(2) determining air gap flux from measured field current and one of said stored machine constants;

(3) determining machine torque from air gap flux, armature current and another of said stored machine constants;

(4) determining machine ohmic losses from measured field voltage, field current and armature current and selected ones of said machine constants;

(5) determining machine efficiency from machine losses and power input to the machine;

(6) processing machine efficiency as a function of air gap flux to determine whether air gap flux should be increased or decreased to increase machine efficiency;

(7) varying air gap flux by a predetermined amount in accordance with the output of said air gap flux control loop;

(8) varying armature current in accordance with the output of said armature current control loop so that the previously determined torque is maintained;

(9) commanding the new values of armature current and air gap flux in said armature current control loop and air gap flux control loop, respectively; and

(10) repeating steps 1–10.

4,484,118

METHOD AND APPARATUS FOR MEASURING A WORKPIECE

Takao Manabe, Shizuoka; Fumio Kamahora, Susono; Tetsu Yoshida, Numazu, and Masakazu Kanemoto, Gotenba, all of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 2, 1982, Ser. No. 384,278

Claims priority, application Japan, Aug. 29, 1981, 56-135998; Oct. 7, 1981, 56-159912

Int. Cl.[3] **G05B** *13/00*

U.S. Cl. 318—561 **12 Claims**

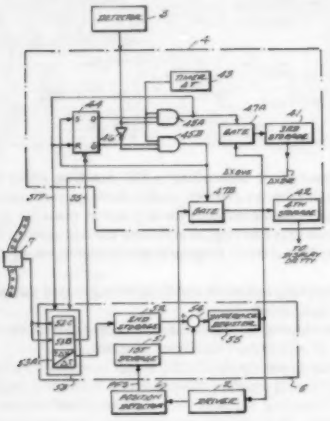
1. A method for making measurements on a workpiece which may have a foreign substance adhered thereto and which is mounted on an apparatus of the type which includes a detector for producing a detecting signal when the detector is brought into and out of contact with the workpiece, a driving means for relatively moving the detector with respect to the workpiece; a control means for producing a signal corre-

sponding to an amount by which the detector is moved with respect to the workpiece and for causing the driving means to stop in accordance with said detecting signal; and a position detection means for detecting the position of the detector; the method comprising the steps of:

relatively moving the detector towards the workpiece at a first speed (V_1) before any first contact position data from said control means;

producing a detecting signal corresponding to the contact position at which the detector contacts with the workpiece or a foreign substance during movement at the first speed;

applying a stop signal which is produced by the control means in response to a detecting signal given from the detector to the driving means;



relatively moving the detector in a reverse direction to the direction with the first speed at a second speed (V_2) to a position adjacent the contact position corresponding to the first detecting signal;

further relatively moving the detector in a direction approaching to the contact position at a third speed (V_3) smaller than the first and the second speed;

producing another detecting signal corresponding to the detector position at which the detector is brought into or out of contact with the workpiece during the movement at the third speed (V_3); and

reading out the contents of the position detecting means when the detecting signal is produced while moving at the third speed.

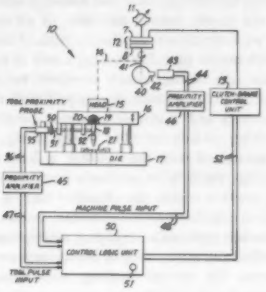
4,484,119

FAIL-SAFE MACHINE CONTROL SYSTEM

Archie F. Kerr, Noblesville, Ind., assignor to AT&T Technologies, Inc., New York, N.Y.

Filed Jun. 28, 1983, Ser. No. 508,702
Int. Cl.[3] B26D *5/00*
U.S. Cl. 318—563 **9 Claims**

1. A fail-safe control sysrem for a machine adapted by cyclical movement to cyclically perform an operation, said system comprising: first signal generator means responsive to such movement to produce a cyclical first signal having a recurrent waveform which remains invariable while said operation and the functioning of said means is normal, fault detector means responsive to a fault in the performance of said operation to change said waveform to thereby indicate said fault, second signal generator means responsive to such cyclical movement to produce a cyclical second signal having a recurrent waveform which remains invariable while the functioning of such means is normal, and control circuit means responsive to said first and second signals to compare their respective waveforms and adapted by such comparison to convert either said fault indicating change in said first signal's waveform or a change



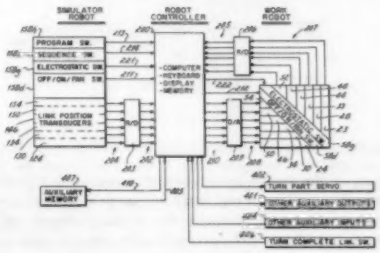
therein indicative of malfunction of said first signal generator means into a stop signal for stopping said machine.

4,484,120

AUXILIARY FUNCTION COMMAND PRESEQUENCING FOR A ROBOT CONTROLLER

Michael B. Olex, Bay Village, Ohio, and Rolf T. Spongh, Waterloo, Belgium, assignors to Nordson Corporation, Amherst, Ohio

Filed Apr. 13, 1983, Ser. No. 484,645
Int. Cl.[3] G05B *19/42*
U.S. Cl. 318—568 **32 Claims**



1. A control system for a work robot comprising:

a controller for concurrently (a) driving at least one articulated robot link under closed loop servo control and (b) executing at least one auxiliary function operating in conjunction with the robot link, in response to a sequence of link position commands and auxiliary function commands read from a robot program memory;

an auxiliary function memory, associated with the controller, for temporarily storing auxiliary function commands;

means for loading the auxiliary function memory with auxiliary function commands, prior to storing a sequence of link position commands and auxiliary function commands in the robot program memory, so that the auxiliary function commands can be read from the auxiliary function memory in a desired order;

a robot simulator manually manipulable to produce a sequence of robot link position commands;

manually operated auxiliary function command sequencing means for effecting the reading of each auxiliary function command, in order, from the auxiliary function memory at a point in the sequence of robot link position commands correlated to the point during the sequence of robot link

position commands at which the sequencing means is manually operated; and

memory means in the controller, coupled to the robot simulator and to the auxiliary function memory, including a robot program memory for storing the sequence of link position commands produced by the simulator interleaved with the auxiliary function commands read from the auxiliary function memory, each auxiliary function command being stored at a point in the sequence of robot link position commands correlated to the point in the sequence of robot link position commands at which the auxiliary function command sequencing means is manually operated.

4,484,121

SERVOCONTROL BY ULTRASONICS OF THE RELATIVE POSITION OF TWO MECHANICAL COMPONENTS

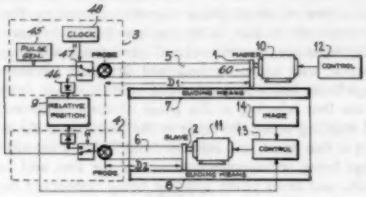
Edmond Chambron, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jun. 10, 1982, Ser. No. 387,143

Claims priority, application France, Jun. 12, 1981, 81 11610

Int. Cl.³ G05B *1/06*

U.S. Cl. 318—640 **7 Claims**



1. A servocontrol for controlling ultrasonically the relative position of a master mechanical component and a slave mechanical component movable along guidance means by respective motors comprising:

first and second ultrasonic probe means positioned for directing ultrasonic beams onto said master and slave components respectively and detecting ultrasonic radiation received; and

a relative position measuring circuit connected to said probe means for measuring the time interval between receipt of ultrasonic radiation by said master component and ultrasonic radiation by said slave component and producing a displacement signal for controlling the motor displacing said slave component in accordance therewith.

4,484,122

VARIABLE POTENTIOMETER MOTOR CONTROLLER

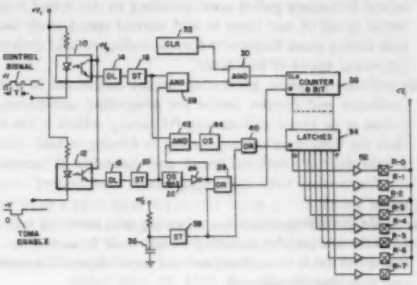
James L. Day, Victor, and Terry D. Seim, Rochester, both of N.Y., assignors to James L. Day Co., Inc., Victor, N.Y.

Filed May 16, 1983, Ser. No. 495,017

Int. Cl.³ G05B *1/06*

U.S. Cl. 318—663 **6 Claims**

1. A variable potentiometer motor controller which comprises means responsive to a recurring control signal for generating a multi-bit digital signal, means for storing said digital signal until said control signal recurs, a network defining a potentiometer having opposite ends and containing a first plurality and a second plurality of series connected resistors, said first and second pluralities of resistors having an equal number of resistors and being connected between said opposite ends of said network and a common junction, the resistors in said first and second pluralities equidistant from said junction being of like resistance, switching means connected individually across each resistor in said first and second pluralities of resistors for alternatively presenting short circuits across said resistors in said first plurality and open circuits across said resistors in said second plurality, and means for operating said switching means which are connected across said resistors in said first and second pluralities which are equidistant from said junction conjointly in response to different bits of said digital signal which are stored in said storing means for varying the



resistance between said opposite ends and said junction while maintaining the resistance between said opposite ends constant, and means for applying control current to a motor in response to the resistance presented by said potentiometer between opposite ends of said network and said junction to operate said motor to move selected distances in opposite directions.

4,484,123

METHOD AND APPARATUS FOR CONTROLLING AND REGULATING A MOTOR WITH A PERMANENT MAGNETIC ROTOR

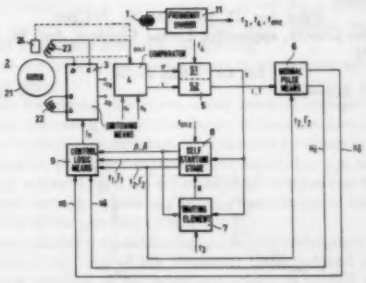
Dan-Corneliu Raducanu, Bad Soden, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany

Filed Dec. 8, 1980, Ser. No. 213,769

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1979, 2949947

Int. Cl.³ H02K *29/04*

U.S. Cl. 318—696 **12 Claims**



1. A control circuit for driving a reactive motor at a substantially constant desired rotational speed and for accelerating said motor after a stoppage thereof, said motor including a rotor having at least one pair of permanent magnetic poles and a stator which is provided with first and second coils, wherein said first coil acts only as a driving coil, and wherein said second coil acts, in a normal speed mode of said control circuit, as sensing means for detecting the rotational speed of said rotor and, in a self-starting mode of said control circuit, as an additional driving coil to said first coil, said control circuit comprising:

(a) voltage supply terminals;

(b) oscillator and divider means for generating a plurality of

timing pulse frequencies including a timing pulse frequency corresponding to said desired rotational speed of said rotor;

(c) normal speed regulating means for generating normal speed pulses depending upon a comparison between output pulses which are provided by said second coil as actual frequency pulses corresponding to the actual rotational speed of said rotor in said normal speed mode and said timing pulse frequency corresponding to said desired rotational speed of said rotor;

(d) self-starting pulse generating means connected to said oscillator and divider means for generating self-starting pulses at an initial self-starting frequency which is lower than the frequency corresponding to driving of said rotor at said desired rotational speed, and thereafter at increasing frequencies until said rotor attains said desired rotational speed;

(e) mode-switching means for receiving said detected speed of said rotor and for initiating switch-over from said normal speed mode to said self-starting mode dependent upon said detected rotor speed;

(f) control logic means for receiving said normal speed pulses and said self-starting pulses and for generating therefrom switching signals which are provided as energizing pulses to said first coil only in the normal speed mode and alternately to said first and second coils in the self-starting mode; and

(g) a switching circuit electrically interposed between said voltage supply terminals and said first and second coils and having a plurality of electrically operated switches for receiving said switching signals and, in response thereto, electrically connecting said first or second coil to one of said voltage supply terminals.

4,484,124

METHOD OF AND APPARATUS FOR DAMPING OF STEPPER MOTOR USING NON-ACTIVE WINDINGS

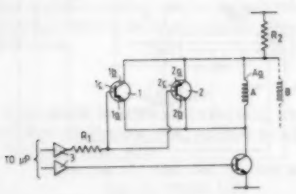
James N. J. White, Kinross; David S. Ruxton, Crieff, and Alec D. Stewart, Fife, all of Scotland, assignors to Rodime Limited, Scotland

Filed Jun. 23, 1982, Ser. No. 391,150

Claims priority, application United Kingdom, Jun. 30, 1981, 8120093

Int. Cl.³ H02K *29/04*

U.S. Cl. 318—696 **4 Claims**



1. A method of controlling the damping of stepper motor movement characterised by:

sensing at least at the penultimate step which windings are receiving current,

switching current to the appropriate winding or windings at a predetermined time in accordance with the step sequence, and

selectively short circuiting the windings not being supplied with current or switched off to provide a bi-directional current path for a current driven by the back electromotive force (EMF) induced in the non-active windings.

4,484,125

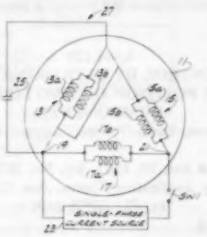
THREE-PHASE DELTA-WOUND MOTOR OPERATED FROM SINGLE-PHASE CURRENT

Claude M. Hertz, Nokomis, Ill., assignor to Ronk Electrical Industries, Inc., Nokomis, Ill.

Continuation of Ser. No. 963,446, Nov. 24, 1978, abandoned. This application Dec. 29, 1980, Ser. No. 220,378

Int. Cl.³ H02P *1/44*

U.S. Cl. 318—768 **10 Claims**



1. A three-phase delta-wound motor adapted for operation from a source of single-phase current comprising first and second terminals adapted to be connected to said source, substantially identical first, second and third phase windings, and a capacitor, said capacitor and said first and second phase windings being series-connected one with the other, the polarity of the first winding at the point of connection with the second winding being the same as the polarity of the second winding at that point, said capacitor and first and second phase windings being series-connected across the first and second terminals, said third phase winding being connected directly across the first and second terminals in parallel with the serially-connected capacitor and the first and second phase windings.

4,484,126

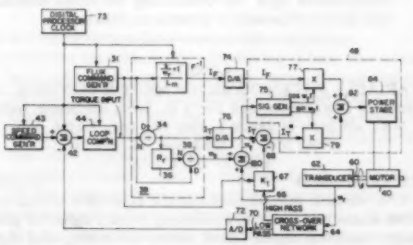
INDUCTION MOTOR CONTROLLER

Donald E. Fulton, Stoneham, and Robert H. Comstock, Andover, both of Mass., assignors to IMEC Corporation, Boston, Mass.

Filed Sep. 7, 1982, Ser. No. 415,682

Int. Cl.³ H02P *5/40*

U.S. Cl. 318—800 **17 Claims**



1. An induction motor controller for providing closed-loop control of an induction motor, comprising:

drive means for generating an A.C. stator current in each stator winding of the motor in response to first and second inputs applied thereto representative of the amplitudes of quadrature components of the A.C. stator current;

means for monitoring the velocity of the motor rotor and for providing a velocity signal representative thereof;

means responsive to the velocity signal and to a first signal applied thereto representative of desired motor rotor

velocity for producing an error signal representative of the difference therebetween;

network means, having a transfer function which is substantially the inverse of the motor transfer function and responsive to first and second inputs respectively representative of motor torque and motor flux level, for producing first and second output signals representative of quadrature components of motor stator current and for producing a slip frequency signal representative of the difference between the motor rotor angular velocity and the frequency of the motor stator current;

wherein the drive means further includes means responsive to the slip frequency signal and to the velocity signal for providing a stator current frequency signal representative of the frequency of the stator current in the stator windings;

means for applying the error signal to the network means first input;

means for applying a signal representative of a desired flux level to the network means second input; and

means for combining the network means first output signal and the velocity signal to provide a combined signal and for applying said combined signal to one of the drive means inputs, including:

means for separating the velocity signal into high frequency components and low frequency components;

means for adding said separated high frequency components and the network means first output signal to provide the combined signal; and

means for applying the combined signal to the drive means first input;

means for applying said second network means output signal to the drive means second input.

4,484,127

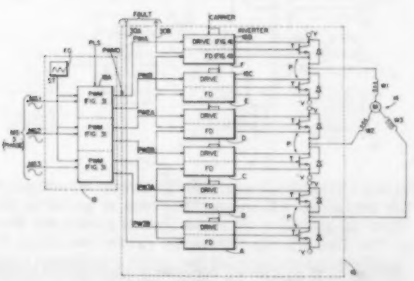
INVERTER POWER TRANSISTOR PROTECTION

Jalal T. Salihi, Manchester, and Leca Boiucaner, Farmington, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed May 28, 1982, Ser. No. 383,053

Int. Cl.³ H02H 7/122

U.S. Cl. 318—802 **9 Claims**



1. A system characterized by:

a motor,

an inverter, for operating the motor, having one or more output power transistors,

an inverter control for providing a drive signal to drive each transistor,

inverter protection means for providing power to a portion of the inverter control and removing said power to turn off said transistor drive in response to a particular transistor operating condition of one of the transistors that occurs during one or more pre-established time intervals while the drive signal is applied;

said inverter protection means comprising means for removing said power if the time it takes for the transistor collector-emitter voltage to drop to the transistor's saturation voltage after the drive signal is applied exceeds a certain predetermined time interval.

4,484,128

VECTOR CONTROL SYSTEM FOR AC MOTOR DRIVES

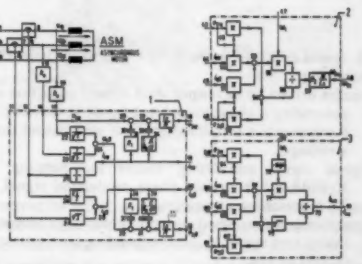
Robert H. Jötten, Darmstadt, and Gerhard U. Mäder, Wehrheim, both of Fed. Rep. of Germany, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 30, 1983, Ser. No. 480,194

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1982, 3212439

Int. Cl.³ H02P 5/40

U.S. Cl. 318—805 **33 Claims**



1. A system for controlling an induction motor, having a rotor winding and a stator winding, driven by a polyphase power supply of variable frequency and variable voltage through motor line terminals, comprising:

means for sensing two motor input currents from said line terminals;

means for sensing two of the motor terminal voltages;

means responsive to said two input currents and two terminal voltages for deriving, by reference to stator coordinates (α, β), vector representative signals $i_{1\alpha}$, $i_{1\beta}$, $u_{1\alpha}$and $u_{1\beta}$, where $i_{1\alpha}$ and $i_{1\beta}$ are orthogonal components of the input currents, where $u_{1\alpha}$ and $u_{1\beta}$ are orthogonal components of the terminal voltages;

vector calculator means for computing the orthogonal components $e_{2\alpha}$, $e_{2\beta}$ of the rotational EMF induced in the rotor winding of the motor by reference to said stator coordinates (α, β) in accordance with the formuls:

$$e_{2\alpha}=L_2/M\cdot\{u_{1\alpha}-R_1i_{1\alpha}-[1/K_{11}]\cdot di_{1\alpha}/dt\}$$

$$e_{2\beta}=L_2/M\cdot\{u_{1\beta}-R_1i_{1\beta}-[1/K_{11}]\cdot di_{1\beta}/dt\}$$

where R_1 is the stator resistance; L_2 is the rotor inductance; M is the mutual inductance; where $K_{11}=L_2/(L_1L_2-M^2)$ and L_1 is the stator inductance; where α and β are the orthogonal axes of a stator-related coordinate reference system;

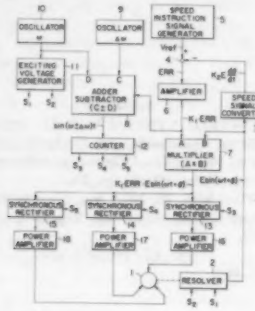
thereby providing a spatial representation of the vector characterizing said induced rotor EMF; and

means responsive to said induced rotor EMF for controlling at least one of the motor electrical input variables.

4,484,129
SPEED CONTROL APPARATUS FOR POLYPHASE INDUCTION MOTORS

Tadahiro Ono, Shizuoka, Japan, assignor to Toshiba Kikai Kabushiki Kaisha and Toei Denki Kabushiki Kaisha, both of Tokyo, Japan

Filed Nov. 14, 1983, Ser. No. 551,140
Claims priority, application Japan, Nov. 15, 1982, 57-200082
Int. Cl.³ H02P *5/40*
U.S. Cl. 318—807 **5 Claims**



1. Speed control apparatus of a polyphase induction motor comprising:

means driven by an output shaft of said induction motor for generating a phase modulated signal E sin $(\omega t+\theta)$ where θ represents a rotational angle of said output shaft and E a voltage;

speed signal converting means for forming a signal $K_2E(d\theta/dt)$ from said phase modulated signal, wherein K_2 represents a constant;

speed instruction signal generating means producing a speed instruction signal V_{ref} corresponding to a rotational speed of said motor;

an adder for obtaining an error signal corresponding to a difference between said speed instruction signal and an output of said speed signal converting means;

a multiplier which multiplies said error signal with said phase modified signal;

slip frequency generating means for generating a slip frequency corresponding to a characteristic of said motor;

adder/subtractor means for effecting addition or substraction operation of said slip frequency and said carrier frequency $\omega/2\pi$ in accordance with said error signal;

means for converting an output of said adder/ subtractor means into a plurality of reference signals having predetermined phase differences;

synchronous rectifying means rectifying an output of said multiplier in accordance with reference signals for producing polyphase voltages; and

means for applying said polyphase voltages to respective phase windings of said induction motor.

4,484,130
BATTERY MONITORING SYSTEMS

Michael W. Lowndes; Derek S. Adams, and Neville J. Arlidge, all of Birmingham, England, assignors to Lucas Industries Limited, Birmingham, England

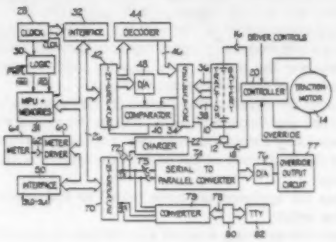
Division of Ser. No. 208,097, Nov. 18, 1980, Pat. No. 4,433,278. This application Sep. 30, 1983, Ser. No. 537,978
Claims priority, application United Kingdom, Jun. 28, 1980, 8021285
Int. Cl.³ H02J *7/04*
U.S. Cl. 320—40 **22 Claims**

1. A charging system for a traction battery pack divided into a plurality of sub-packs comprising:

means for charging the battery pack according to a predetermined charging cycle, the charging cycle having a plurality of phases,

means for measuring the voltages of the individual sub-packs,

means for selecting the sub-pack having the lowest voltage,



means for determining the rate of rise of the voltage of said selected sub-pack, and

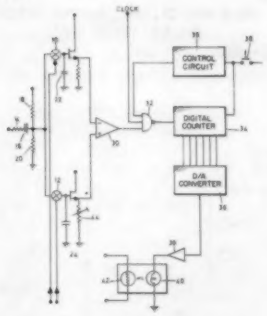
means for determining when said rate of rise falls below a predetermined level,

one of said phases of the charging cycle being terminated when said rate of rise falls below said predetermined level.

4,484,131
CABLE TESTING

Christopher G. Jenkinson, Johannesburg, South Africa, assignor to Patented Devices (PTY) Limited, Johannesburg, South Africa

Filed Sep. 9, 1982, Ser. No. 416,295
Claims priority, application South Africa, Sep. 10, 1981, 81/6280
Int. Cl.³ G01R *31/08*
U.S. Cl. 324—52 **7 Claims**



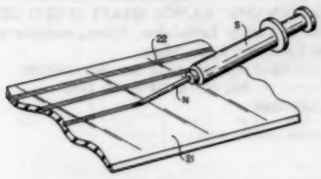
1. Pulse echo equipment, comprising a transmitter arranged to apply test pulses to an end of a cable system, and circuit means arranged to receive echo pulses generated in the cable system, said circuit means including an impedance matching network for matching of the impedance of the cable being tested, and including a voltage measuring circuit arranged to measure the average voltage of echo pulses, over first and second very short intervals of time selectively interspaced between the application of test pulses, the voltage measured being dependent on the impedance characteristics of first and second selected short lengths of cable, a matching impedance network, and means for adjusting the impedance of said matching impedance network in response to a comparison of the average voltages measured over the first and second intervals of time by the voltage measuring circuit.

4,484,132

CRACK DETECTING SYSTEM

Nelson A. Crites, 3 Gateway Estates, Florida City, Fla. 33034

Filed Mar. 9, 1981, Ser. No. 241,507
Int. Cl.³ G01R *31/02, 31/12*
U.S. Cl. 324—54 **12 Claims**



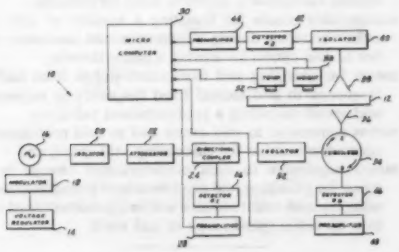
1. A crack or rupture detecting system comprising an electrically-insulated substrate layer of material which is applied while elastomeric to an object to be monitored so it will conform thereto but hardens and is capable of cracking or rupturing, said substrate carrying conductive lines formed by small conductive particles in electrical contact which will separate upon the occurrence of a crack or rupture in the substrate, indicating an adjacent crack or rupture in the object and an indicating system connected in circuit with said conductive lines.

4,484,133

MICROWAVE MOISTURE SENSOR

Michael T. Riggin, Downsview, Canada, assignor to Sentrol Systems Ltd., Downsview, Canada

Filed Dec. 23, 1981, Ser. No. 333,661
Int. Cl.³ G01R *27/04*
U.S. Cl. 324—58.5 A **10 Claims**



1. Apparatus for measuring the moisture content of a web of material including in combintion means for irradiating said web with microwave energy, means for measuring the intensity of microwave energy transmitted through said web to produce a transmission signal, said transmission signal having a dependence on the thickness of said web, means for measuring the intensity of microwave energy reflected from said web to produce a reflection signal, and means responsive to said reflection signal for correcting said transmission signal for said dependence on the thickness of said web.

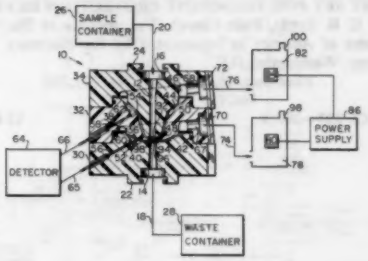
4,484,134

ELONGATE PARTICLE SENSING APERTURE

Michael T. Halloran, Pembroke Pines, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed Aug. 31, 1981, Ser. No. 297,651
Int. Cl.³ G01N *27/00*
U.S. Cl. 324—71.1 **15 Claims**

1. A particle analyzing apparatus for detecting the properties of particles, said particle analyzing apparatus including a container for holding a liquid suspension of the particles; a flow cell having an aperture formed therein; means for moving a sample of the liquid suspension through said aperture; means for providing an electrical field and current in said aperture to generate detectable electrical signals with the passage of the particles through said aperture; means for detecting the signals; the improvement comprising: said aperture of said flow cell having a tube-like configuration along its axial length, said aperture having an upstream end for receiving the sample and a downstream end whereat the sample exits; said means or providing said electric field and current comprising means for generating said field and current essentially only in a particle sensing portion of the axial length of said aperture, thereby defining said aperture to have a non-particle sensing portion extending from said upstream end of said aperture to said particle sensing portion; whereby said non-particle sensing portion of said aperture optimizes liquid accelerating, while said particle sensing portion of said aperture provides for a good signal response; said means for providing said electric



field and current includes: an upstream electrode and a downstream electrode, means for providing electrical communication between said upstream electrode and the sample in said aperture at a position downstream of said upstream end of said aperture, means for providing electrical communication between said downstream electrode and the sample at a position downstream of said upstream electrode, and an electrical source for energizing said electrodes; said means for providing electrical communication for said upstream electrode includes a first channel formed in said flow cell for containing an electrolyte solution, and said means for providing electrical communication for said downstream electrode includes a second channel formed in said flow cell for containing an electrolyte solution, each said channel forming an opening into said aperture, said openings being positioned along the axis of said aperture in spaced-apart relationship with respect to each other, and each of said openings of said channels effectively surrounds the flow of the liquid suspension through said aperture.

4,484,135

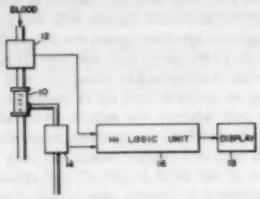
HEMATOCRIT MEASURING INSTRUMENT

Toshikazu Ishihara, and Hazime Inagaki, both of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed Aug. 10, 1982, Ser. No. 406,878
Claims priority, application Japan, Aug. 18, 1981, 56-129197
Int. Cl.³ G01H *27/00*
U.S. Cl. 324—71.1 **4 Claims**

1. A hematocrit measuring instrument wherein hematocrit is derived from the electrical resistivity of the blood comprising a blood resistivity measurement device, an ultrafilter for filtering a part of the plasma of the blood, a filtrate resistivity measurement device for measuring the resistivity of the filtrate from the ultrafilter and an arithmetic circuit for calculating the hematocrit of the blood from the resistivities of the blood and

the filtrate, the hematocrit measuring instrument being connected into a circulatory path for the blood outside the patient's body for continuous measurement of hematocrit from the resistivities of the blood and the filtrate from the ultrafilter.

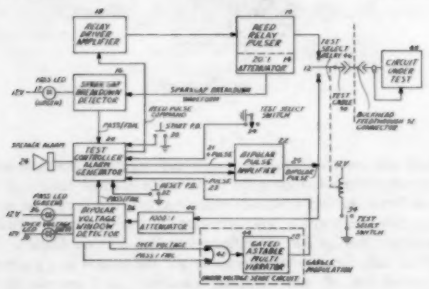


4,484,136

TEST SET FOR TRANSIENT PROTECTION DEVICES

John E. B. Tuttle, Falls Church, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 25, 1981, Ser. No. 277,306
Int. Cl.³ G01R *31/02*
U.S. Cl. 324—158 R **12 Claims**



1. Apparatus for testing a transient protection circuit including a positive and negative high voltage protection device and a high voltage fast rise time protection device, said apparatus including first testing means for testing said positive and negative high voltage protection device, second testing means for testing said high voltage fast rise time protection device, and selection means for selecting one test mode of a first test mode for testing said positive and negative high voltage protection device and a second test mode for testing said high voltage fast rise time protection device, wherein:

said first testing means comprises first test signal generating means for producing a bipolar first test signal of alternate spaced-apart positive and negative high voltage pulses;

said second testing means comprises second test signal generating means for producing a second test signal of high voltage fast rise time test pulses with a voltage-time waveform;

said selection means comprises switching means for connecting said transient protection circuit to receive a selected one of said first and second test signals;

said first testing means further comprises

comparison means for determining whether said alternate positive and negative high voltage pulses of said bipolar first test signal are within respective allowable positive and negative voltage windows, and

first indication means for indicating pass or failure of said positive and negative high voltage device; and

said second testing means further comprises

means for sensing changes in said voltage-time waveform,

means for comparing said changes to predetermined voltage-time levels, and

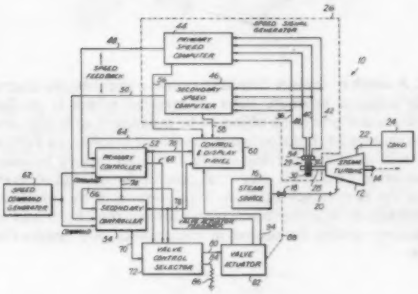
second indicating means for indicating pass or failure of said high voltage fast rise time protection device.

4,484,137

WIDE DYNAMIC RANGE SHAFT SPEED SENSOR

Hsiao-Nan L. Chang, Leominster, Mass., assignor to General Electric Company, Lynn, Mass.

Filed Apr. 15, 1982, Ser. No. 368,739
Int. Cl.³ G01P *3/48, 3/54*
U.S. Cl. 324—166 **6 Claims**



1. A shaft speed signal generator for providing a signal responsive to a speed of a shaft, said speed being variable, comprising:

means for generating cycles of an alternating current signal having a variable frequency responsive to said speed;

a clock effective to produce clock pulses at at least first and second substantially different fixed frequencies;

accumulator means for counting a number of said clock pulses occuring during a predetermined successive number of said cycles for storing a count therein;

means for changing said fixed clock pulses from said first frequency to said second fixed frequency in response to said speed exceeding a predetermined value;

means responsive to said count and to said predetermined successive number for calculating said speed; and

means responsive to each predetermined change in said speed for changing said predetermined successive number whereby said count remains within a predetermined range over an entire speed range of said shaft.

4,484,138

METHOD OF ELIMINATING EFFECTS OF SPURIOUS FREE INDUCTION DECAY NMR SIGNAL CAUSED BY IMPERFECT 180 DEGREES RF PULSES

Paul A. Bottomley, Clifton Park, and William A. Edelstein, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 1, 1982, Ser. No. 394,355
Int. Cl.³ G01R *33/08*
U.S. Cl. 324—307 **34 Claims**

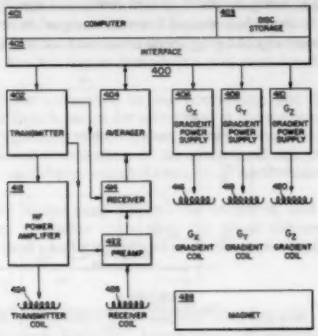
1. A method for overcoming the effects of a spurious FID NMR signal by shortening the duration thereof so as to avoid interference with the desired NMR signal, said method comprising sequentially the steps of:

positioning the NMR sample in a static magnetic field;

irradiating said NMR sample with a 180° RF pulse such that inherent imperfections in said 180° RF pulse cause a plurality of nuclear spins in said NMR sample to change orientation by an angle other than 180° relative to the direction of said magnetic field, said nuclear spins producing a net nuclear magnetization component transverse to

the direction of said static magnetic field so as to induce a spurious FID signal in an NMR signal receiving coil upon termination of said 180° RF pulse; and

applying a crusher magnetic field gradient pulse to said



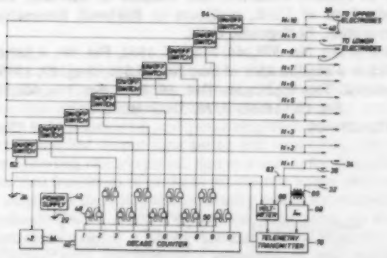
NMR sample so as to dephase said nuclear spins such that the duration of said spurious FID NMR signal is shortened, said crusher magnetic field pulse being applied to said NMR sample during at least a portion of the duration of said spurious FID NMR signal.

4,484,139

ZOOM GUARD RESISTIVITY LOGGING SYSTEM FEATURING RESISTOGRAM PROFILE

Frank R. Bravenec, Houston, Tex., assignor to Halliburton Company, Duncan, Okla.

Filed Apr. 19, 1982, Ser. No. 369,378
Int. Cl.³ G01V 3/24
U.S. Cl. 324—366 **6 Claims**



1. An improved resistivity logging system for obtaining resistivity of earth formations at a plurality of radial depths from a well borehold, comprising:

(a) an elongate tool body adapted to be lowered into a wellbore;

(b) a central electrode on said tool body for injecting a current flow into the earth's formations;

(c) means for measuring the resistivity of the earths formations as a function of current flow from said central electrode and the voltage difference between said central electrode and a reference ground electrode;

(d) a plurality of current emitting guard electrodes symmetrically located along said tool body above and below said central electrode;

(e) switching means associated with symmetrical pairs of said current emitting electrodes for connecting symmetrical pairs of said current emitting electrodes to said central electrode in a timed sequence to enable said current emitting electrodes to equalize in voltage to said central electrode to increase the effective length of said central electrode and thereby increase the depth of penetration of current flow from said central electrode into the earth's formation; and

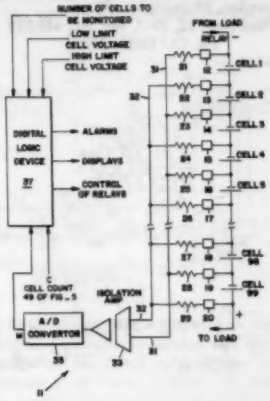
(f) means for determining the resistance of the earth formations as a function of said voltage difference and said current flow from said central electrode.

4,484,140

BATTERY SCANNING SYSTEM

Lloyd F. Dieu, Poulsbo, Wash., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 23, 1982, Ser. No. 371,043
Int. Cl.³ G01N 27/46
U.S. Cl. 324—434 **8 Claims**



1. A battery scanning system comprising:

(a) voltage connecting means for individually connecting across the voltage terminals of each of a plurality of battery cells, said voltage connecting means including

(1) a plurality of relays, said plurality of relays being connected to said plurality of cells so that each of said plurality of cells is connected between two of said plurality of relays,

(2) a plurality of load resistors, one of said load resistors connected in series with one of said plurality of relays,

(3) a positive load line, said positive load line being connected to the positive terminal of each of said cells via one of said load resistors and one of said relays, and

(4) a negative load line, said negative load line being connected to the negative terminal of each of said cells via one of said load resistors and one of said relays;

(b) an isolation amplifier, the input of said isolation amplifier connected to the output of said voltage connecting means;

(c) an analog to digital converter, the output of said isolation amplifier connected to the input of said analog to digital converter; and

(d) a digital logic device including a cell selector means for sequentially selecting a predetermined number of cells, a high limit means for determining when a cell has a voltage that is greater than a predetermined high limit and a low limit means for determining when a cell has a voltage that is less than a predetermines low limit;

(e) said cell selector means including

(1) a ring counter means having a start input and a reset input;

(2) a comparator;

(3) cell number means for selecting the number of cells to be monitored,

(4) means for loading the output of said cell number means in said comparator and for starting said ring counter;

(5) means for connecting the individual sequential output of said ring counter to activate the relays associated with each cell sequentially;

(6) means for summing the outputs of said ring counter and comparing the sum to the number of cells loaded into said comparator, said comparator providing a reset output when the sum of said ring counter outputs equals the load value; and

(7) means for applying said reset output from said comparator to the reset input of said ring counter.

4,484,141

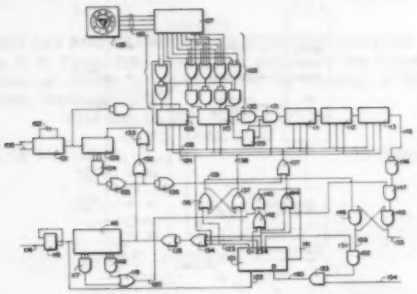
DEVICE FOR ISOELECTRIC FOCUSING

Richard B. Cook, Rockland, Me.; Calvin A. Saravis, Waban, Mass., and Peter Lefferson, St. Petersburg, Fla., assignors to FMC Corporation, Philadelphia, Pa.

Filed Nov. 12, 1982, Ser. No. 441,018

Int. Cl.³ G01N *27/62*

U.S. Cl. 324—464 **5 Claims**



1. A device for detecting the isoelectric end point in an isoelectric focusing zone, across which a voltage gradient is established, the electrical resistance of said zone increasing with time under the influence of said gradient, said device comprising:

(a) means for integrating a characteristic of electrical input over two successive periods of time each of sufficient duration to provide a statistically representative indication of the change of said characteristic between the two periods,

(b) means for comparing the values of the integrals so obtained for said successive time periods,

(c) means for setting said device to detect a particular differential between said values which is indicative of the reaching of the isoelectric end point,

(d) means for causing the recurrence of the operation of means (a) and means (b) whenever the differential between the values compared by means (b) fails to reach the value set by means (c), and

(e) means for effecting an alerting function when the differential between values compared by means (b) reaches or passes the value set by (c).

4,484,142

PHASE DETECTOR CIRCUIT

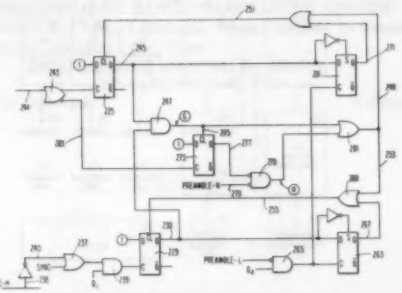
Bernardo Rub, Marlborough, and Norman A. Field, Maynard, both of Mass., assignors to Digital Equipment Corp., Maynard, Mass.

Filed May 7, 1982, Ser. No. 375,932

Int. Cl.³ H03K *5/135, 5/26*

U.S. Cl. 328—155 **7 Claims**

1. A phase detector, which is formed to provide correction signals to a controllable pulse signal source to cause first signals from said controllable pulse signal source to be in a predetermined phase relationship with second signals from another pulse signal source comprising, in combination: first input signal means formed to receive said first pulse signals from said controllable pulse signal source; second input signal means formed to receive said second pulse signals; correction signal means coupled to said first and second input signal means and formed to provide a first correction signal in response to a said first signal being received at said first input signal means and formed to provide a second correction signal in response to a said second signal being received at said second input signal



means; control circuitry coupled to said correction circuity means to terminate any of said correction signals which might be present in response to both said first and second corrrection signals being concurrently in effect: and monitoring circuitry means connected to both said control circuitry means and said correction signal means to effect a termination of any of said first and second correction signals that is of a duration which exceeds a predetermined duration.

4,484,143

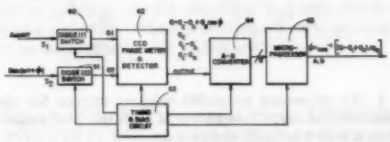
CCD DEMODULATOR CIRCUIT

Barry T. French, Fullerton, and Michael J. McNutt, Yorba Linda, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 379,244, May 17, 1982, Pat. No. 4,389,615, which is a continuation of Ser. No. 70,560, Aug. 29, 1979, abandoned. This application Dec. 10, 1982, Ser. No. 448,570

Int. Cl.³ H03D *3/18, 5/00*; H03K *5/22*

U.S. Cl. 329—50 **3 Claims**



1. In a data transmission system for sending digital data between a transmitter and a receiver over a transmission link by a modulated carrier signal in which predetermined phase differences and predetermined amplitude levels are established during successive modulation periods representative of preselected data combinations, a demodulator at the receiver for detecting said phase differences and said amplitude levels to restore the digital data to its original format which comprises:

a carrier signal input for supplying said modulated carrier signal;

a reference signal input for supplying a reference frequency signal;

first switch means having an input connected to said carrier signal input and an output;

second switch means having an input connected to said reference signal input and an output;

a charge coupled circuit having first and second inputs respectively connected to the outputs of said first and second switch means, and an output; said charge coupled circuit functioning to demodulate said modulated carrier signal;

timing means connected to and controlling said first and second switch means for providing, at the outputs of said first and second switch means, signals representing a predetermined combination of the carrier and reference signals to said charge coupled circuit at predetermined times; and

processing means connected to the output of said charge coupled circit for calculating the phase difference between said carrier signal and said reference signal.

4,484,144

SEMICONDUCTOR LIGHT AMPLIFIER

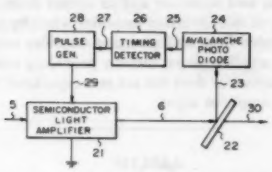
Yukio Nakagome; Kitsutaro Amano, both of Yokohama, and Takaya Yamamoto, Niza, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 086,465, Oct. 17, 1979, abandoned. This application Jul. 1, 1981, Ser. No. 279,310

Claims priority, application Japan, Oct. 19, 1978, 53-127805

Int. Cl.³ H01S *3/10*; H04B *9/00*

U.S. Cl. 330—4.3 **5 Claims**



1. In combination, a semiconductor light amplifier having an active layer for performing light amplification of input light pulses having peaks applied thereto and developing amplified output light pulses with said peaks amplified, means receptive of the amplified output light pulses and converting them into corresponding electric pulses, detector means for detecting the repetition frequency of peaks in the electric pulses and limiting the amplitude thereof, pulse generating means for receiving the amplitude-limited electric pulses and generating an electric drive pulse train of a stable repetition clock frequency synchronized with the repetition frequency of said peaks and applying the electric drive pulse train to said semiconductor light amplifier for effecting intermittent amplification of the input light pulses applied to the semiconductor light amplifier in synchronism with the pulse repetition frequency of the electric drive pulse train.

4,484,145

PULSE WIDTH MODULATED POWER AMPLIFIER

Tord L. Haulin, Hammarbyg, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

PCT No. PCT/SE81/00361, § 371 Date Jul. 29, 1982, § 102(e) Date Jul. 29, 1982, PCT Pub. No. WO82/02294, PCT Pub. Date Jul. 8, 1982

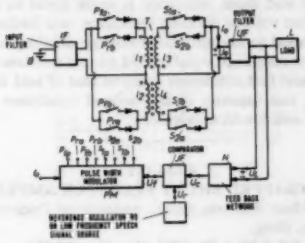
PCT Filed Dec. 8, 1981, Ser. No. 405,957

Claims priority, application Sweden, Dec. 19, 1980, 8008988

Int. Cl.³ H03F *3/38*

U.S. Cl. 330—9 **4 Claims**

1. In a pulse width modulated power amplifier for converting, in response to a controlling input signal, a direct voltage to a low-frequency output signal from zero Hz to a given upper limiting frequency and with a voltage amplitude which is not limited to the level of said direct voltage, the amplifier including a pair of input terminals for connection of the direct voltage, a pair of output terminals for connection to a load and a transformer with four windings, a first and a second controllable switch connected to the end points of the windings on the direct voltage input side of the transformer, a third and a fourth controllable switch connected to the end points of the windings of the transformer load side to form a first converter step, and a pulse width modulater adapted for steering the switches in response to an error signal derived from said output signal and said controlling input signal corresponding to the desired alternating voltage, so that during a first time interval first and second controllable switches are steered to alternating conductive and blocked states with a given pulse rate in response to the magnitude of said error signal, and the third and fourth switches are steered to conductive and blocked states



during said time interval, the improvement comprising fifth and sixth switches connected in parallel with said first and said second switches on the direct voltage input side, and with reverse conducting direction, seventh and eighth switches connected in parallel with said third and fourth switches on the load side, and with reverse conducting direction to form a second switching stage, said pulse width modulator being adapted for steering, in response to said error signal during a second time interval subsequent to said first time interval, the fifth and sixth switches to alternating conductive and blocked conditions with a given pulse rate in response to the size of said error signal and also for steering the seventh and eighth switches on the load side to conductive and blocked conditions during said second time interval and said first switch, on the battery side, being adapted to be steered to a conductive state even during at least a part of said subsequent second time interval when said output signal is positive.

4,484,146

DIFFERENTIAL AMPLIFIER CONTAINING A LOW-PASS FILTER

Kazufumi Naito, Otsu, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Japan

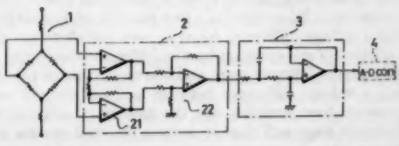
Filed Jun. 22, 1982, Ser. No. 390,886

Claims priority, application Japan, Jun. 30, 1981, 56-103015

Int. Cl.³ H03F *3/45*

U.S. Cl. 330—69 **3 Claims**

(PRIOR ART)



1. A differential amplifier containing therein a low-pass filter, characterized in that said amplifier comprises:

a first resistance connected between the node of an input resistance and a feedback resistance at said differential amplifier and the negative input line of an operational amplifier,

a first condenser for grounding said first resistance at the input resistance side,

a second condenser for connecting said first resistance at a side of the negative input line side of said operational amplifier with the output line thereof,

a second resistance connected between the node of a not-grounded voltage dividing resistance and a grounded voltage dividing resistance and the positive input line of said operational amplifier,

a third condenser for grounding said second resistance at the voltage dividing resistance side, and

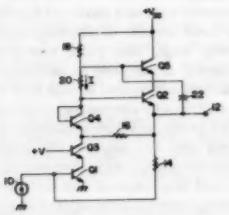
a fourth condenser for grounding said second resistance at a side of the positive input line of said operational amplifier, so that said input resistance is made equal to said not-grounded voltage dividing resistance, said feedback resistance equal to said grounded voltage dividing resistance, said first resistance equal to said second resistance, capacity of said first condenser equal to that of said third condenser, and capacity of said second condenser equal to that of said fourth condenser.

4,484,147

BOOTSTRAPPED SHUNT FEEDBACK AMPLIFIER

Arthur J. Metz, Gervais, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Mar. 31, 1983, Ser. No. 481,024
Int. Cl.³ H03F *3/04*
U.S. Cl. 330—156 **5 Claims**



1. A shunt feedback amplifier, comprising:

a control stage comprising in combination a common-emitter amplifier and a common-base amplifier connected in cascode, the base of said common-emitter amplifier connectable to an input signal source and the collector of said common-base amplifier coupled to an output terminal;

a feedback path connected from said output terminal to the base of said common-emitter amplifier;

an emitter-follower stage the base of which is coupled to the collector of said common-base amplifier and the emitter of which is coupled to said output terminal;

bias means for controlling said emitter follower stage in such a manner that said emitter follower stage provides a current conduction path to develop an output signal in response to an input signal of a first polarity while maintaining a voltage difference equal to zero volts between the collector of said common-base amplifier and the emitter of said emitter follower stage, said bias means further providing a voltage difference between said collector of said common-base amplifier and the emitter of said emitter follower stage sufficient to reverse bias said emitter follower stage in response to an input signal of a second polarity; and

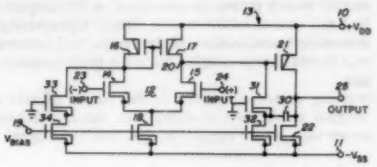
bootstrap means for maintaining a substantially constant collector-to-emitter voltage for said emitter follower stage.

4,484,148

CURRENT SOURCE FREQUENCY COMPENSATION FOR A CMOS AMPLIFIER

James B. Wieser, Sunnyvale, and Ray A. Reed, San Jose, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Sep. 13, 1982, Ser. No. 417,769
Int. Cl.³ H03F *3/45*
U.S. Cl. 330—253 **7 Claims**



1. A CMOS linear signal amplifier frequency compensation circuit comprising:

an inverting amplifier having input and output terminals;

a frequency compensation capacitor coupled between said input and output terminals; and

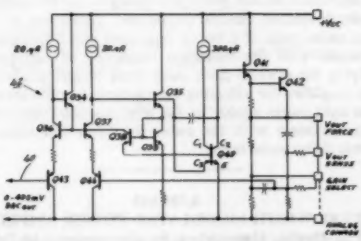
a current feedback element coupled in series with said capacitor wherein said current feedback element comprises a common gate transistor amplifier having an input source coupled to said capacitor and an output drain coupled to said input of said inverting amplifier whereby said capacitor is coupled from said inverting amplifier output to said inverting amplifier input thereby providing compensation but said capacitor does not act as a capacitive load at said inverting amplifier input.

4,484,149

SINGLE-SUPPLY IC DIGITAL-TO-ANALOG CONVERTER FOR USE WITH MICROPROCESSORS

Peter R. Holloway, Andover, Mass., assignor to Analog Devices, Inc., Norwood, Mass.

Division of Ser. No. 120,892, Feb. 12, 1980, Pat. No. 4,323,795.
This application Dec. 7, 1981, Ser. No. 327,921
Int. Cl.³ H03F *1/34*
U.S. Cl. 330—291 **6 Claims**



1. In an IC electronic component of the type including an amplifier and signal-generating circuitry for developing a variable input signal for said amplifier; said amplifier having a signal-responsive drive transistor for producing an output signal varying in correspondence to said input signal; said component including power supply means comprising two supply terminals one of which is at a reference potential;

that improvement in such component for enabling said amplifier to be supplied with operating power only from said two power supply terminals and yet produce said output signal so that it faithfully varies with said input signal at

any output level within a range of levels extending down to said reference potential; said improvement comprising:

means in said drive transistor for sensing the onset of saturation;

control signal means coupled to said sensing means for developing a control signal reflecting the degree of saturation in said drive transistor; and

circuit means responsive to said control signal and operable automatically to adjust the drive signal applied to said drive transistor so as to reduce said saturation while providing for the development of said output signal at levels down to said reference potential without the detrimental changes in amplifier responsiveness which otherwise would result from uncontrolled saturation in the drive transistor.

4,484,150

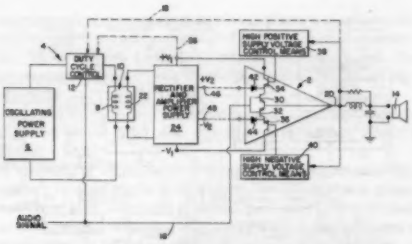
HIGH EFFICIENCY, LIGHT WEIGHT AUDIO AMPLIFIER AND POWER SUPPLY

Robert W. Carver, 330 Avenue A, Snohomish, Wash. 92890

Continuation of Ser. No. 261,238, Jun. 27, 1980, abandoned. This application Sep. 1, 1982, Ser. No. 413,876

Int. Cl.³ H03F *1/02*

U.S. Cl. 330—297 **20 Claims**


DUTY CYCLE CONTROL
OSCILLATING POWER SUPPLY
RECTIFIER AND AMPLIFIER POWER SUPPLY
HIGH POSITIVE SUPPLY VOLTAGE CONTROL MEANS
HIGH NEGATIVE SUPPLY VOLTAGE CONTROL MEANS
AUDIO SIGNAL

1. An apparatus for amplifying an audio signal having an amplitude which varies at an audio frequency, said apparatus comprising

(a) audio amplifier means for amplifying the audio frequency amplitude variations of the audio signal to produce an output signal corresponding to the audio signal, said amplifier means including an audio signal receiving means for receiving the audio signal and a power receiving means for receiving electrical energy for producing the output signal;

(b) power supply means for supplying power to said amplifier means, said power supply means adapted to be connected with a source of commercially available, sinusoidally varying supply voltage having a constant frequency within the audio range, a transformer having a primary winding and a secondary winding, said secondary winding being operatively connected to said power receiving means of said amplifier means, said primary winding being adapted to be connected to said source;

(c) power control means to cause variable amounts of electrical energy to be transmitted to the primary winding of the transformer to induce corresponding variable electrical energy in said secondary winding, said power control means including switch means connected between said source and said primary winding for operating in a conductive state in response to a control signal for a selected portion of each cycle of said sinusoidally varying supply voltage to cause said selected portion of said sinusoidally varying supply voltage to be applied across said primary winding only when said switch means is in said conductive state; and

(d) control signal generating means responsive to the time varying amplitude of the audio signal to generate said control signal for said power control means to control the period of conduction of said switch means during each cycle of said sinusoidally varying supply voltage in correspondence with the time varying amplitude of the audio signal to minimize the time portion of each cycle of sinusoidally varying supply voltage during which idling currents pass through said primary winding.

4,484,151

AMPLIFIER CIRCUIT

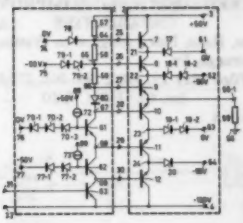
Aloysius J. Nijman; Franciscus A. C. M. Schoofs, and Job F. P. van Mil, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 239,876, Mar. 2, 1981,. This application Aug. 19, 1983, Ser. No. 524,694

Claims priority, application Netherlands, Mar. 10, 1980, 8001410

Int. Cl.³ H03F *3/30*

U.S. Cl. 330—297 **6 Claims**



3. An amplifier circuit, capable of being realized in integrated form, comprising a control circuit, an amplifier stage connected thereto, two supply terminals coupled to supply sources for applying mutually different potentials to the supply terminals, the amplifier stage comprising 2n transistors, where n is an integer greater than two, each having a main current path and a control electrode, the main current paths being connected in series between the two supply terminals; an output terminal connected to the junction point of the nth and the (n+1)th main current path of the series arrangement of transistors, the n transistors arranged between the first supply terminal of the two supply terminals and the output terminals being of a complementary conduction type to the n transistors arranged between the output terminal and the second supply terminal of the two supply terminals; 2(n−1) further supply terminals each of which is connected via at least one diode to one junction point of consecutive main current paths of the series arrangement of the transistors, the junction points to which the further supply terminals are connected not being connected to the output terminal, these further supply terminals also being connected to further supply sources for applying to the supply terminals supply voltages which are located between the potentials of the two supply sources, the diodes being connected such that the diode connected to a predetermined junction point is reverse-biassed when the potential of that junction point lies between the potential of the further supply terminal connected to that diode and the potential of the supply terminal on the same side of the load connection as the further supply terminal; characterized in that the further supply sources apply an at least substantially similar sequence of incrementally decreasing supply voltages to both the respective (n−1) further supply terminals, considered from that terminal of the two supply terminals which has the highest polarity towards the output terminal, and to the respective (n−1) further supply terminals considered from the output terminal towards the other one of the two supply terminals, wherein the difference between the voltage of one of said further supply sources and the next adjacent further supply source does not exceed the breakdown voltage of any of said additional transistors under all normal operating conditions, and wherein the control circuit comprises a series circuit con-

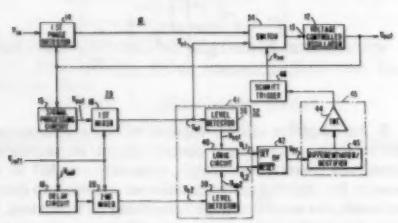
nected between first and second control circuit supply terminals, characterized in that the series circuit comprises n serially arranged impedance circuits, a voltage shifting stage, and n driver transistors having their main current conduction paths arranged serially, that the junctions of the impedance circuits, voltage shifting stage, and driver transistors are connected sequentially to the base terminals of the amplifier stage, the junctions of the impedance circuits being connected to the base terminals of the transistors connected between the first supply terminal of the amplifier stage and the output terminal, that the further supply terminals are connected sequentially to the junctions between the impedance circuits via diodes, that an input terminal is connected to the base of the driver transistor connected to the second control circuit supply terminal, and that the further supply terminals are connected sequentially to the bases of the other driver transistors.

4,484,152

PHASE-LOCKED LOOP HAVING IMPROVED LOCKING CAPABILITIES

Ronald L. Lee, Reno, Nev., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 19, 1982, Ser. No. 379,810
Int. Cl.³ H03L *7/10*
U.S. Cl. 331—1 A **14 Claims**



1. A phase-locked loop having improved off-frequency detection, comprising:

means providing an alternating input signal;

oscillator means providing an output signal having a frequency and phase to be locked to the frequency and phase of said alternating input signal;

means providing a first reference signal;

first mixer means for mixing said output signal and said first reference signal and for producing a first mixed signal in response thereto;

delay means responsive to said output signal for producing a delayed signal representative of said output signal and delayed in time;

second mixer means for mixing said delay signal and said first reference signal and for producing a second mixed signal in response thereto, wherein said second mixed signal is delayed with respect to said first mixed signal;

logic means for logically relating said first and said second mixed signals and for producing first and second logic signals in response thereto;

flip-flop means providing a flip-flop signal in response to said first and said second logic signals with the frequency of said flip-flop signal representing the difference between the frequency of said output signal and the frequency of said first reference signal;

frequency detector means responsive to said flip-flop signal for producing an error signal representative of the frequency of said flip-flop signal;

threshold detector means responsive to said error signal for producing a switching signal, wherein said switching signal is in a first state when said error signal exceeds a predetermined value and in a second state when said predetermined value is not exceeded;

phase detector means for detecting a phase difference between said output and said input signals, and for producing a difference signal in response thereto, said phase detector means having a narrow bandwidth;

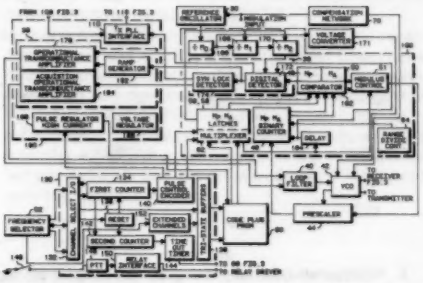
and switching means selectively connecting said difference signal and said first mixed signal to said oscillator means for controlling the frequency and phase of said variable frequency output signal, said switching means responsive to said switching signal such that when said predetermined value is exceeded said first mixed signal is input to said oscillator means, and when said predetermined value is not exceeded said difference signal is input to said oscillator means.

4,484,153

VOLTAGE CONVERTER FOR A FREQUENCY SYNTHESIZER

Jaime A. Borras, Hialeah; Ruben J. Gonzalez, Miami, both of Fla.; Daniel M. Smith, Schaumburg, Ill.; Jose I. Suarez, Miami, Fla.; Alan M. Victor, Cooper City, Fla., and Alfred B. Wieczorek, Plantation, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 6, 1981, Ser. No. 251,559
Int. Cl.³ H03L *7/18*
U.S. Cl. 331—10 **3 Claims**



1. In a phase locked loop for a frequency synthesizer, said phase locked loop including a reference oscillator for generating a reference signal, a first divider for dividing said reference signal and generating at least one divided reference signal, a voltage controlled oscillator (VCO) having a control input, a second divider for dividing a VCO output signal, a phase detector for monitoring said divided VCO output signal and said divided reference signal and generating a first control signal to said control input of said VCO, a voltage converter, comprising:

circuit means, having an input connected to said first divider and an output connected to said control input of said VCO, for monitoring the voltage level of said divided reference signal and converting said voltage level into a second control signal which is directed to said control input of said VCO, whereby the potential across said control input of said VCO is increased, thereby increasing the tuning range of said VCO.

4,484,154

FREQUENCY CONTROL WITH A PHASE-LOCKED-LOOP

Randall B. Pavin, Fullerton, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 4, 1981, Ser. No. 299,453
Int. Cl.³ H03L *7/06*; G01S *13/82*
U.S. Cl. 331—23 **8 Claims**

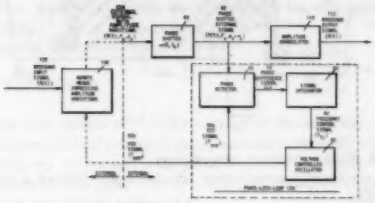
1. A frequency control system for automatically adjusting the frequency of an alternating signal and an external signal derived coherently therefrom to the drift-prone zero phase-

shift frequency of phase-shift means adapted to receive said external signal, said control system comprising:

phase-shift means responsive to said external signal for introducing a frequency sensitive bipolar phase-shift to said external signal to produce a phase-shifted external signal, said phase-shift means introducing zero phase-shift at drift-prone frequency, f_o;

an alternating signal source for generating said alternating signal of adjustable frequency covering a range of frequencies including frequency, f_o, and variations thereof;

means responsive to both said alternating signal and said phase-shifted external signal for producing a phase-difference signal corresponding to the difference in phase between said alternating signal and said phase-shifted external signal which comprises means for biasing out the phase-shift due to transit time delays of said external signal; and



means responsive to said phase-difference signal for converting said phase-difference signal to a frequency control signal;

said alternating signal source being responsive to said frequency control signal to minimize the difference in phase between said alternating signal and said phase-shifted external signal whereby said alternating signal frequency is adjusted to be substantially equal to frequency, f_o.

4,484,155

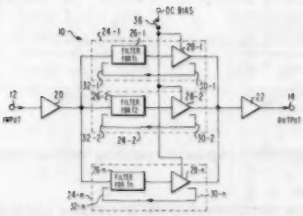
CHANNELIZED FREQUENCY MEMORY SYSTEM EMPLOYING FEEDBACK

Markus Nowogrodzki, Sussex, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 31, 1982, Ser. No. 363,867

Int. Cl.³ G01S 7/30; H03B 5/00

U.S. Cl. 331—49 **7 Claims**



5. A frequency memory system comprising, in combination:

an input terminal to which may be applied an RF burst signal at a center frequency f in the band from f1 through fn;

an output terminal;

a plurality of frequency memory modules, each coupled between said input terminal and said output terminal;

each said frequency memory module comprising a bandpass filter coupled to said input terminal, an amplifier coupled between said filter and said output terminal and feedback means from the output of said amplifier to the input of said filter, said filter being adapted to pass an RF signal having a center frequency in the band from f1 through fn, each filter passing a different center frequency from that of the other filters, whereby when a particular frequency is applied at said input terminal in the band f1 through fn the associated filter with the closest center frequency passes said frequency to said amplifier and the frequency is sustained after said burst signal ceases by oscillations due to said feedback means and amplifier gain.

4,484,156

TRANSISTOR MICROWAVE OSCILLATORS

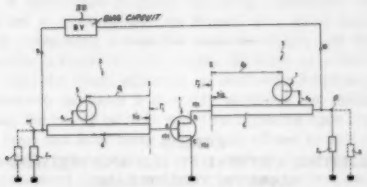
Amarpal S. Khanna; Pierre Guillon, and Yves Garault, all of Limoges, France, assignors to Centre National de la Recherche Scientifique/(C.N.R.S.), Paris, France

Filed Mar. 18, 1982, Ser. No. 359,299

Claims priority, application France, Mar. 18, 1981, 81 05447; Sep. 23, 1981, 81 17934

Int. Cl.³ H03B 5/18

U.S. Cl. 331—60 **7 Claims**



1. A transistor microwave oscillator, comprising:

a transistor;

a transistor biasing means; and

a first resonating circuit having a dielectric resonator connected to a first terminal of said transistor, and at least a second resonating circuit having a dielectric resonator connected to a second terminal of said transistor;

said dielectric resonators of said first and second resonating circuits being similar and operating at the same resonance frequency, each resonating circuit defining a microwave output.

4,484,157

VOLTAGE CONTROLLED CRYSTAL OSCILLATOR HAVING WIDE FREQUENCY RANGE

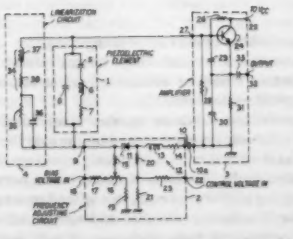
Jacques Helle, and Gérard Charlet, both. of Sartrouville, France, assignors to Compagnie d'Electronique et de Piezo-Electricite, Sartrouville, France

Filed Mar. 1, 1982, Ser. No. 353,102

Claims priority, application France, Mar. 3, 1981, 81 04198

Int. Cl.³ H03B 5/32

U.S. Cl. 331—116 R **4 Claims**



1. A voltage controlled crystal oscillator comprising:

a piezoelectric element having a Q factor less than that of

quartz and including a crystal selected from the group consisting of lithium tantalate and lithium niobate;

a feedback linearization circuit connected in parallel with said piezoelectric element, said feedback linearization circuit comprising an inductance connected in series with a parallel circuit comprising a resistor and a capacitor;

a frequency adjusting circuit connected in series with the parallel combination of said piezoelectric element and said linearization circuit; and

an amplifier circuit having a feedback loop in which is connected the series combination of said frequency adjusting circuit connected in series with the parallel combination of said piezoelectric element and said linearization circuit, said amplifier circuit oscillating at a frequency corresponding to a minimum impedance defined by said series combination of said frequency adjusting circuit connected in series with the parallel combination of said piezoelectric element and said linearization circuit.

4,484,158

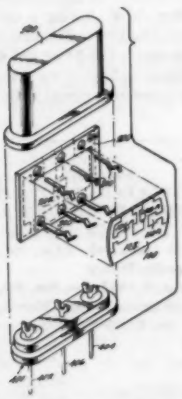
MONOLITHIC CRYSTAL FILTER AND METHOD OF MANUFACTURING SAME

Gerald E. Roberts, Lynchburg, and Alfred G. Staples, Evergreen, both of Va., assignors to General Electric Company, Lynchburg, Va.

Filed Jul. 7, 1982, Ser. No. 395,986

Int. Cl.³ H03H *9/05, 9/56*

U.S. Cl. 333—191 **26 Claims**



23. A monolithic crystal filter comprising:

a multi-resonator crystal body having plural electrically conductive resonator electrode/lead structures disposed on opposite sides thereof;

a non-conductive substrate member comprising plural electrical conductor areas disposed on the side thereof remote from said crystal body and having openings therein;

plural electrically conductive support members physically supporting said crystal body in a spaced-apart relationship from said substrate member and simultaneously electrically connecting respective ones of said resonator electrode/lead structures on the crystal body and said electrical conductor areas on the substrate member through said openings.

4,484,159

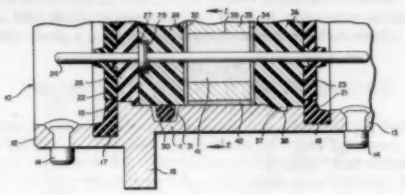
FILTER CONNECTOR WITH DISCRETE PARTICLE DIELECTRIC

Thomas J. Whitley, Scarbrough, Canada, assignor to Allied Corporation, Southfield, Mich.

Filed Mar. 22, 1982, Ser. No. 360,506

Int. Cl.³ H03H *7/01;* H01P *1/202*

U.S. Cl. 333—182 **12 Claims**



1. A filter connector comprising:

an electrically conductive tubular body having a central axis;

a first electrode coaxially mounted within said tubular body and spaced from said body;

a tubular electrode coaxially mounted within said body and around and spaced from said first electrode; and

an electrically insulating body consisting of a plurality of discrete barium titanate particles located in the space between and in contact with said first and tubular electrodes.

4,484,160

ELECTRONIC COMPONENT OPERATING WITH ACOUSTIC WAVES

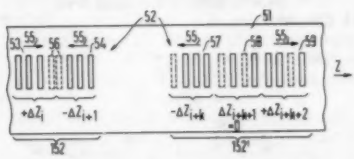
Gerd Riha, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 8, 1983, Ser. No. 472,980

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1982, 3209962

Int. Cl.³ H03H *9/64, 9/145*

U.S. Cl. 333—195 **16 Claims**



1. An electronic component operating with acoustic waves, comprising:

a substrate;

at least one electromechanical transducer carried on said substrate;

at least one finger structure carried on said substrate;

at least one of said finger structures comprising at least one region in which fingers are weighted;

at least one of said finger weighted structures comprising in said region a plurality of such spaced principal groups extending in a direction Z along the principal axis of wave propagation in said weighted region, each of said principal groups in said region comprising at least two subgroups;

said sub-groups extending in said direction Z;

each of said sub-groups comprising at least two successive real finger edges and at least an essential number of said sub-groups having an oscillating displacement ΔZ; the number n of all principal groups of the respective finger

structure being equal to or greater than T·B, where T·B is the time bandwidth product, with T being the predetermined duration of the predetermined pulse response and B being the predetermined bandwidth of the transfer function of said respective finger structure;

the respective amount of displacement ΔZ_i of the finger edges of the i^{th} individual sub-group, said i^{th} sub-group belonging to a respective sequence of sub-groups of said weighted region, is determined by an additional oscillating phase modulation b(t) predetermined for said sequence, wherein said phase modulation b(t) being such that the number of oscillation within each individual principal group of said sequence is an integer which is not greater than half the number of sub-groups of said principal group;

whereby the relationship

$$e^{jb(t)} \simeq a(t)/r(t)$$

holds true, where $e^{jb(t)}$ is the average of the function e over said individual principal group and approximately equal to a(t)/r(t), where a(t) is the predetermined amplitude modulation of said pulse response, and r(t) is equal to or greater than a(t) for all values of t;

and

the amount of displacement ΔZ_i of the finger edges of a respective i^{th} sub-group at its center Z_i is

$$\Delta Z_i = (\lambda_i/2\pi) \cdot b(t_i),$$

where $t_i = Z_i/v$, where Z is the direction of wave propagation with a velocity v and λ_i is the local constructive wave length at the location of the i^{th} sub-group.

4,484,161

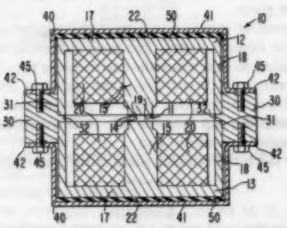
SILICONE RUBBER FOR RELIEVING STRESS IN MAGNETIC MATERIAL

Dale M. Barger, Los Altos, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed May 24, 1982, Ser. No. 381,665

Int. Cl.³ H01P 1/218; H01F 7/00

U.S. Cl. 333—202 **11 Claims**



1. A combination comprising a first body of magnetic material having a first surface, said first body forming a boundary of a gap for establishing a useful magnetic field therein, a second body having a second surface, and a silicone rubber piece compressibly disposed between said first surface and said second surface in order to reduce the change in said useful magnetic field due to a temperature change by relieving stress in said first body in the direction of said useful magnetic field.

7. The combination of claim 1 which is a part of a YIG-tuned filter.

4,484,162

MICROWAVE OSCILLATOR

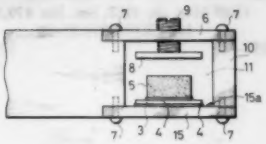
Hiroshi Kamada, and Akira Takayama, both of Soma, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Aug. 5, 1982, Ser. No. 405,349

Claims priority, application Japan, Aug. 7, 1981, 56-117435[U]

Int. Cl.³ H01P 7/10

U.S. Cl. 333—219 **12 Claims**



1. A microwave oscillator including a dielectric resonator received in a cavity portion formed in a metal frame, said frame comprising a first flat plate to which said dielectric resonator is fastened and a second flat plate on which a trimmer plate for finely adjusting an oscillation frequency of the microwave oscillator is movably mounted, the metal frame having the cavity portion with two opposing open end faces, said open end faces being respectively closed by said first and second flat plates, said dielectric resonator and said trimmer plate received in said metal frame being opposite to each other within said cavity portion, wherein said dielectric resonator is fastened to said first flat plate through a ceramic substrate and layers of an adhesive.

4,484,163

ARRANGEMENT FOR BIASING HIGH-FREQUENCY ACTIVE COMPONENTS

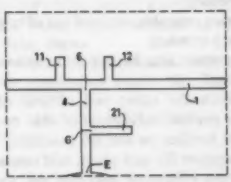
Frans C. de Ronde, Lesigny, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 21, 1982, Ser. No. 380,634

Claims priority, application France, May 27, 1981, 81 10571

Int. Cl.³ H01P 1/00

U.S. Cl. 333—247 **2 Claims**



1. A circuit arrangement comprising planar conductors on a dielectric support for carrying a DC bias signal to an active RF component, said arrangement including an RF transmission line connected to the active RF component and a transmission line section connected at a junction to the RF transmission line for supplying a DC bias signal to the active RF component, said transmission line section presenting to the RF transmission line a high RF impedance and a low DC impedance, thereby inhibiting passage on the section of an RF signal having a predefined frequency carried by the RF transmission line but allowing passage on the section of the DC bias signal,

wherein the improvement comprises a band-pass filter including first and second conductive strips connected in parallel with the RF transmission line on opposite side of said junction, each of said conductive strips being spaced from said junction by a distance approximately equal to

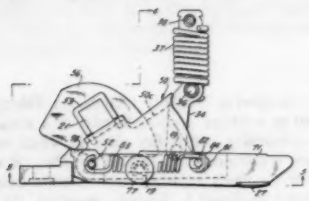
one-eighth of the wavelength corresponding to the predefined frequency.

4,484,164

BRAIDLESS MOVABLE CONTACT WITH WIPING ACTION

David P. McClellan, Westminster, and Frank W. Kussy, Randallstown, both of Md., assignors to Siemens-Allis, Inc., Atlanta, Ga.

Filed Mar. 28, 1983, Ser. No. 479,365
Int. Cl.³ H01H 73/00
U.S. Cl. 335—16 **18 Claims**



1. A circuit breaker including a stationary contact, a single movable contact operable into and out of engagement with said stationary contact, an elongated contact arm having said movable contact at one end thereof, a pivot to which the other end of said contact arm is mounted for pivotal movement of said single contact arm between circuit breaker on and off positions, a conducting support for said pivot, said contact arm at said other end being bifurcated into first and second portions between which said support is disposed, and biasing means clamping said support between said portions to form good electrical wiping contact between said support and said contact arm while the latter is stationary as well as while it moves between said on and off positions.

17. A circuit breaker comprising:

a stationary contact;

a movable contact operable into and out of engagement with said stationary contact;

an elongated contact arm having said stationary contact at one end thereof;

a pivot to which the other end of said contact arm is mounted for pivotal movement of said contact arm between circuit breaker on and off positions;

a conducting support for said pivot, said contact arm at said other end being bifurcated into first and second portions between which said support is disposed; and,

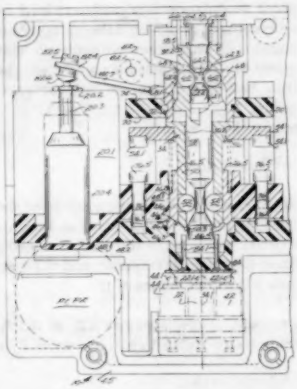
biasing means clamping said support between said portions to form good electrical wiping contact between said support and said contact arm while the latter is stationary as well as while it moves between said on and off positions, said pivot extending through enlarged openings in said first and second portions and each of said openings being partly defined by a cam surface, during movement of said contact arm from said off position to initial engagement between said contacts said pivot being disposed at a first location along said cam surface, and further movement of said contact arm toward said arm position after initial engagement between said contacts causing each of said cam surfaces to move relative to said pivot to cooperate therewith and impart limited longitudinal movement to said contact arm whereby said movable contact wipes across said stationary contact.

4,484,165

CIRCUIT CONTROL DEVICE

Aimé J. Grenier, and Robert W. Peterson, both of North Attleboro, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 6, 1982, Ser. No. 395,174
Int. Cl.³ H01H 9/24
U.S. Cl. 335—165 **19 Claims**



1. A circuit control device comprising first and second contact assembly means movable relative to one another into circuit engagement and circuit disengagement,

support means,

the first contact assembly means comprising a contact plate mounted for movement on the support means between an upper contacts disengaged position and a lower contacts engaged position,

means to move the contact plant between the upper and lower positions, the means to move the contact plate to the lower position includes a cap member movable between an upper extremity and a lower extremity, the cap member adapted to transfer motion to the contact plate when the contact plate is in its upper position and when the cap member moves toward its lower extremity,

the second contact assembly means comprising a movable contact means and movable contact biasing means biasing the movable contact means in a direction toward the contact plate,

motion transfer means connecting the cap member and the movable contact means, the motion transfer means being configured so that when the cap member moves toward its lower extremity it will move the movable contact means away from the contact plate to prevent contact engagement until the cap member moves in a direction to return to its upper extremity, and

means to latch the contact plate in its lower position.

4,484,166

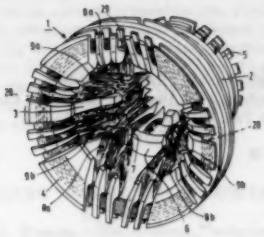
COIL SUPPORT FOR AN ELECTROMAGNETIC DEFLECTION UNIT

Halbe Osinga; Nicolaas G. Vink, and Adriaan J. Groothoff, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 1, 1983, Ser. No. 519,175
Claims priority, application Netherlands, Aug. 9, 1982, 8203133
Int. Cl.³ H01F 5/02
U.S. Cl. 335—213 **12 Claims**

1. An electromagnetic deflection unit for a cathode-ray tube, comprising a hollow support adapted to surround a part of the cathode-ray tube, the inside of the support carrying a deflec-

tion coil wound directly thereon, the support comprising at each of its respective ends a slotted annular member, groups of turns of the coil longitudinally extending from the slots in one annular member to the slots in the other annular member, and



means provided between the ends of the support for locally supporting the longitudinal groups of coil turns in such manner that these groups are free from engagement with the inner surface of the support.

4,484,167

ACTIVATING MAGNET, PARTICULARLY A STROKE MAGNET

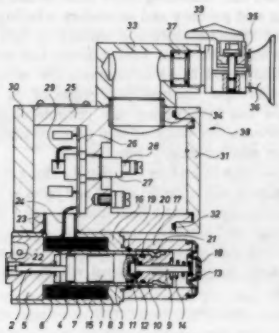
Christoph Gibas, Neunkirchen, Fed. Rep. of Germany, assignor to bso Steuerungstechnik GmbH, Fed. Rep. of Germany

Filed Nov. 23, 1983, Ser. No. 554,802

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1982, 3243999

Int. Cl.³ H01F 7/08

U.S. Cl. 335—260 **5 Claims**



1. An activating magnet, particularly a stroke magnet, having a coil, comprising:

a magnet housing immediately surrounding the circumference of the coil;

a spool abutting the housing;

an armature arranged within the coil so as to be axially moveable therein;

a pressure-proof junction box rigidly connected to the magnet housing, containing connections of the coil; and

a pressure-proof pole tube on which the coil is arranged, said magnet housing being pressure-proof and abuts the coil on the pole tube on both sides;

a pole core abutting the magnet housing;

an activating ram penetrating the pole core;

wherein the diameter of the pole core is larger than the coil in that the pole tube and the pole core on the one side and the magnet housing on the other side are rigidly connected with each other by means of a connecting means, in that the coil connections pass out of the magnet housing, and in that the junction box is rigidly connected with the magnet housing on the side thereof from which the coil connections protrude.

4,484,168

ELECTROMAGNETIC RELAY

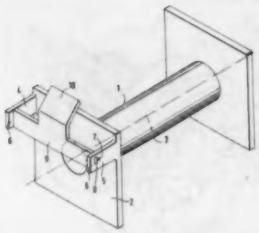
Werner Minks, Heroldsberg, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 16, 1983, Ser. No. 562,260

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1983, 3307921

Int. Cl.³ H01F 7/13

U.S. Cl. 335—274 **3 Claims**



1. In an electromagnetic relay having an angular armature and a U-shaped yoke on the flange of the coilform, said yoke comprising legs extending in the direction of the coil axis and a crosspiece, a foil-spring portion on said crosspiece resting on the angular edge of the angular armature, the improvement comprising:

both said coilform and said legs comprising one single molded plastic part;

said crosspiece and said foil-spring portion being formed of a resilient metal; and

the ends of said crosspiece embodying flap members engaged within corresponding slots formed in said legs for fixing said crosspiece in position.

4,484,169

TRANSFORMER APPARATUS WITH -SUPERIMPOSED INSULATED SWITCH AND TRANSFORMER UNITS

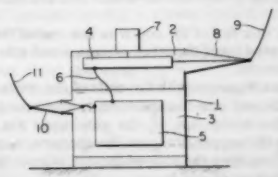
Akira Nishikawa, Nara, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Oct. 25, 1982, Ser. No. 436,620

Claims priority, application Japan, Nov. 5, 1981, 56-178568; Nov. 5, 1981, 56-178569

Int. Cl.³ H01F 27/10

U.S. Cl. 336—57 **11 Claims**



1. A transformer apparatus comprising a tranformer tank accommodating a transformer unit and filled with an insulating oil, and a switch tank accommodating a switch unit and filled with an insulating gas, said switch means being disposed on top of said transformer tank and made integral therewith, such that these tanks are in communication with each other along a movable boundary face between the insulating oil within said

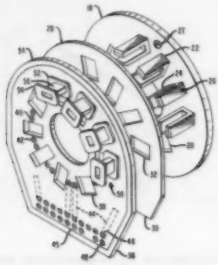
transformer tank and the insulating gas within said switch tank, thereby permitting expansion of said insulating oil into said switch tank, said switch unit and said transformer unit being connected to each other in the interior of said communicating tanks.

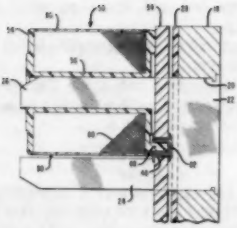
4,484,170

DOT MATRIX PRINT HEAD SOLENOID ASSEMBLY

Robert L. Wirth, Ithaca; David E. Weeks, Newfield, and John W. Reece, Ithaca, all of N.Y., assignors to NCR Corporation, Dayton, Ohio

Filed Feb. 25, 1983, Ser. No. 470,011
Int. Cl.³ H01F *15/10*; H05K *3/32, 1/00*
U.S. Cl. 336—65 **12 Claims**





1. A method of securing a coil carrying bobbin to a printed circuit board having conductors thereon, said bobbin having a pair of integral post-like extensions of a length to pass through apertures having copper linings in said board and each of said extensions having a pair of opposed grooves therein for accommodating one or the other end of a coil wire, comprising the steps of

placing one end of the coil wire into one of the grooves and across the tip of one extension and into the other groove therein,

placing the other end of the coil wire into one of the grooves and across the tip of the other extension and into the other groove therein,

inserting the extensions with the ends of the coil wire in the grooves thereof into the apertures in said board, and

soldering the wired tips of the extensions for securing thereof to the copper linings in the apertures in said board and for connecting the ends of the coil wire to the respective conductors of said board.

5. A solenoid coil arrangement comprising a

substrate having a plurality of copper-lined apertures therethrough,

conductive material on one surface of the substrate and individually associated with the apertures, a

coil carrying member having posts integral therewith and extending from one end thereof and positioned to be inserted into the apertures in the substrate, said posts having a pair of opposed grooves therein for accommodating the end of a coil wire in the grooves on the sides of each post and across the tip thereof, and

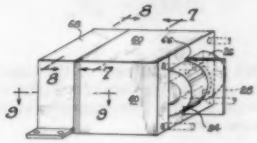
means for fusing the end of the coil wire with the copper lining of each aperture and with the respective conductive material.

4,484,171

SHIELDED TRANSFORMER

Robert C. McLoughlin, 4414 Alhambra, San Diego, Calif. 92107

Filed Feb. 18, 1983, Ser. No. 467,740
Int. Cl.³ H01F *15/04*
U.S. Cl. 336—84 R **8 Claims**



1. A shielded transformer comprising:

(a) a core with at least one window, said core being composed of multiple ferromagnetic laminations;

(b) a primary winding encircling a portion of said core and passing through one window in said core;

(c) a secondary winding encircling a portion of said core and passing through said core;

(d) a metallic case enclosing said primary and secondary windings, said case including outer faces of said core and surrounding said primary and secondary windings where the windings extend outside said window in said core;

(e) a metallic shield between said primary and secondary windings, said shield being in said window in said core, said shield having a juncture with edges of the faces of said window and intercepting any possible electrostatic field line between any point on said primary winding and any point on said secondary winding; and

(f) a metallic overlap extending completely along the length of the juncture of said metallic shield and faces in said core for intercepting electrostatic field lines having a tendency to pass through said juncture, said metallic overlap including conducting wall means on the faces of said window, said wall means having faces against which a face of the shield abuts.

4,484,172

HUMIDITY SENSOR, COMPRISED OF COMPOUND METAL OXIDES WITH PEROVSKITE STRUCTURE

Clark F. Grain, Framingham, Mass., assignor to Arthur D. Little, Inc., Cambridge, Mass.

Filed Apr. 1, 1983, Ser. No. 481,219
Int. Cl.³ H01L *7/00*
U.S. Cl. 338—35 **5 Claims**

1. A humidity sensitive semiconductor device comprising an insulating base member; and

a humidity sensitive coating on said base member having at least two spread apart metal electrodes connected thereto, said coating consisting essentially of (a) a compound of the formula

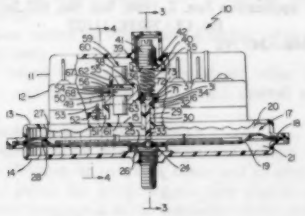
$L_{1-x}Sr_xCoO_3$ where L is a member of the lanthanide series of elements selected from the group consisting essentially of lanthanum, cerium, praseodymium, neodymium, promethium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium, and lutetium and x is from near zero up to 0.5 and (b) an anion selected from the group consisting essentially of the organic anions of monobasic acids, dibasic acids or polybasic acids, inorganic anions and mixtures thereof.

4,484,173

PRESSURE TRANSDUCER DEVICE USING HALL ELEMENTS

Charles J. Everett, Clinton, Conn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Aug. 29, 1983, Ser. No. 527,037
Int. Cl.³ H01L *10/10, 43/06*
U.S. Cl. 338—42 **6 Claims**



1. In a control device having a housing means provided with an actuator chamber separated from a pressure differential chamber by wall means having opening means therethrough receiving an axially movable actuator pin that transmits axial movement of a movable part in said pressure differential chamber to said actuator chamber, an adjustable range spring being disposed in said actuator chamber and being operatively interconnected to said actuator pin to tend to move said actuator pin in one direction relative to said housing means, said spring having opposed ends, the improvement comprising Hall effect transducer means in said actuator chamber, said actuator pin having magnet means for operating said transducer means as said movable part axially moves said actuator pin relative to said housing means, said magnet means being disposed in offset relation to the axis of said actuator pin and moving in unison therewith relative to said transducer means, said magnet means comprising an arm having opposed ends and a magnet carried by one of said opposed ends, the other of said opposed ends of said arm being operatively interconnected to said actuator pin, said actuator pin having opposed ends, said other end of said arm being operatively interconnected to one of said opposed ends of said actuator pin, one of said opposed ends of said spring bearing against said other end of said arm holding said other end of said arm against said one end of said actuator pin whereby said magnet moves in unison with said actuator pin.

4,484,174

VIDEO DISC PLAYER HAVING IMPROVED SQUELCH SYSTEM

James A. Wilber, Indianapolis, Ind., and Charles M. Wine, Princeton, N.J., assignors to RCA Corporation, New York, N.Y.

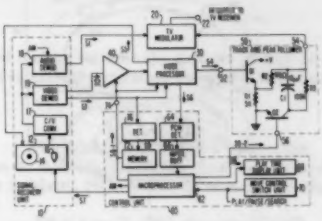
Filed Jan. 7, 1982, Ser. No. 337,841
Int. Cl.³ H04N *5/93;* **G11B** *9/06, 19/02*
U.S. Cl. 358—340 **6 Claims**

1. A video disc player, comprising: signal recovery means for recovering a video signal and a data signal from a video disc record;

processor means coupled to said recovery means for receiving said video and data signals and for providing a processed video output signal and a data output signal;

output means coupled to said processor means for receiving said processed video signal and providing an output signal;

first squelch circuit means connected between said recovery means and said processor means and responsive to a first squelch signal supplied thereto for squelching said recovered video signal prior to processing thereof by said processing means;



second squelch circuit means connected between said processor means and said output means and responsive to a second squelch signal supplied thereto for squelching said processed video output signal;

switch means for providing a player operating mode control signal;

control means coupled to receive said data output signal and said player operating mode control signal for selectively producing said first and second squelch signals; and wherein

said second squelch circuit means includes detector means responsive to said second squelch signal for detecting peaks of a given sense of said processed video output signal and for applying the resultant peak detected signal to said output means.

4,484,175

ROTARY BEACON

Richard M. McCarthy, Bridgeport, Conn., assignor to R. E. Dietz Company, Syracuse, N.Y.

Filed Sep. 30, 1982, Ser. No. 429,987
Int. Cl.³ B60Q *1/52*
U.S. Cl. 340—84 **16 Claims**

1. A rotary assembly for use in a beacon for supporting and rotating at least one light powered by an electric power source, the rotary assembly comprising:

a generally horizontal base having an axis extending perpendicularly with respect to the base;

a generally horizontal circular lower ring fixed with respect to said base and having its center coincident with said axis of said base;

a generally horizontal turntable mounted on said base for rotation about said axis;

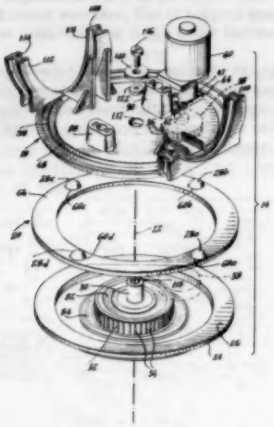
a generally horizontal circular upper ring fixed with respect to said turntable and having its center coincident with said axis, said upper ring being located above and in spaced relation to said lower ring, each said ring including a circular race facing the race of the other ring;

a plurality of rotatable bearings supporting said turntable for rotation on said base, said bearings being in contact with and rolling in a circular path on said races, said bearings being separated circumferentially about said circular path, at least one said race including means for maintaining said bearings in said circular path;

means for maintaining said circumferential separation of said bearings;

means secured to said turntable for carrying said electric light;

electrically powered means for rotating said turntable with respect to said base; and



said turntable having electrical contacts for transmitting electricity to said light, said base having contacts for connection to said electrical power source, said turntable contacts being electrically connected to said base contacts as said turntable rotates.

4,484,176

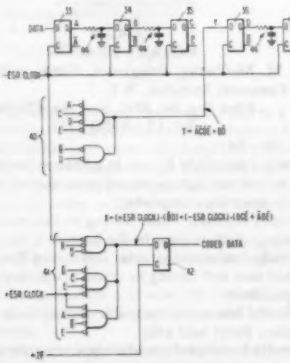
RUN LENGTH LIMITED DATA ENCODER

William B. Fitzpatrick, Westminster, Colo., assignor to Storage Technology Corporation, Louisville, Colo.

Filed Nov. 24, 1982, Ser. No. 444,158

Int. Cl.³ H03K *13/24*

U.S. Cl. 340—347 DD **8 Claims**



1. A circuit for the encoding of a stream of data pulses comprising:

a clock for putting out ±CLOCK signals;

a first group of first, second and third flip-flop circuit elements arranged serially, the first of said flip-flop circuit elements being adapted to receive said stream of data pulses to be encoded, said first, second and third flip-flop circuit elements outputting signals A, B and C, respectively;

first and second groups of combinational logic elements; and

a second group of flip-flop circuit elements comprising a pair of sequentially connected flip-flop circuit elements, the first of which is adapted to receive a signal Y from said first group of combinational logic elements and output a signal D to the second one of said pair of flip-flop circuit elements, the second of said pair of flip-flop circuit elements being adapted to output a signal E;

wherein said first group of combinational logic elements is adapted to generate said signal Y, having the Boolean value $\overline{ACDE}+B\overline{D}$, and said second group of combinational logic is adapted to output an encoded data signal X, said signal X being equivalent to the Boolean statement $(+CLOCK)\cdot(\overline{BD})+(-CLOCK)\cdot(B\overline{CE}+\overline{A}B\overline{E})$.

4,484,177

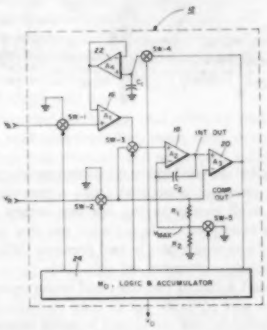
ANALOG-TO-DIGITAL CONVERTER APPARATUS FOR CONDITION RESPONSIVE TRANSDUCER

Francis M. Jobbagy, Monroe, Conn., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation of Ser. No. 939,315, Sep. 5, 1978, abandoned. This application Jun. 2, 1980, Ser. No. 155,362

Int. Cl.³ H03K *13/02*

U.S. Cl. 340—347 NT **19 Claims**

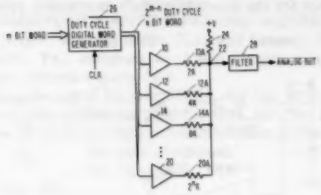


1. In a dual slope analog-to-digital converter for emitting a digital output signal corresponding to an analog signal being received, single cycle conversion means operative to convert the received analog signal to a digital output signal in a single up-down integration cycle and comprising first input means for receiving an analog voltage signal to be converted, second input means for receiving a reference voltage signal, means for deriving a predetermined max. voltage signal from the voltage signal of said second input means, means establishing a datum level voltage, integrator means operative seriatim to integrate a first signal corresponding to the differential between the derived max. voltage signal and the received analog signal for a predetermined time period and on expiration of said predetermined time period to integrate a second signal corresponding to the differential between said reference voltage signal and said max. voltage signal, comparator means adapted to receive said integrated signals for effectively varying the integration time period of said second signal until a predetermined threshold level is achieved between the integrated second signal output of said integrator means and said datum level voltage, switching means for switching in a feedback path from the comparator means output to the integrator means automatically to restore the integrator prior to each said integration cycle and signal emitting means for emitting a digital output signal derived from an accumulative digital count correlated to the time span of said variable time period.

4,484,178
DIGITAL-TO-ANALOG CONVERTER

Jeffrey L. Lovgren, Rochester, Minn.; George C. Thomas, Longmont, Colo., and John T. Trnka, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 22, 1982, Ser. No. 391,059
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 DA **3 Claims**



1. Apparatus for generating a duty cycle modulated digital value and an analog signal level therefrom, said apparatus comprising:

conversion means for converting a digital value to an analog signal level;

storage means for storing a base digital value, an overflow count, and an initial count for each desired analog signal level;

data processing means comprising:

address means for selecting from said storage means a base digital value, an overflow count and an initial count;

output means for providing the base digital value to said conversion means at the beginning of the duty cycle period;

means for changing the base digital value to a second digital value at a switchpoint in the duty cycle period;

means for counting intervals of time within the duty cycle period, said counting means indicating overflow conditions during the duty cycle period when said counting means wraps around from maximum count to zero count;

means for loading said counting means with the selected initial count;

means for detecting the duty cycle switchpoint at one of the overflow conditions indicated by said counting means;

means for indicating to said detecting means the selected overflow count indicating the overflow condition at which the switchpoint is to occur whereby the overflow count and the initial count may be selected to provide the desired switchpoint and thus the desired modulation;

smoothing means for smoothing out the modulation of the analog signal from said conversion means so that the smoothed analog signal level corresponds to a value equivalent to the modulated digital value.

4,484,179
TOUCH POSITION SENSITIVE SURFACE

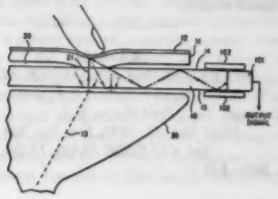
Leonard R. Kasday, Plainsboro, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 140,715, Apr. 16, 1980, abandoned. This application Dec. 23, 1981, Ser. No. 333,744
Int. Cl.³ G08C *9/00*
U.S. Cl. 340—365 P **30 Claims**

1. A touch position sensitive device for use in conjunction with a signal source, said device comprising

spaced apart surfaces arranged such that signals are introduced by total internal reflection between said surfaces as a result of a change in medium bounding at least one of said surfaces, and

a flexible overlay adjacent said one surface, said overlay adapted to be deflected into contact with said one surface in response to a depression of said overlay so as to cause said medium change thereby providing a distinctive signal

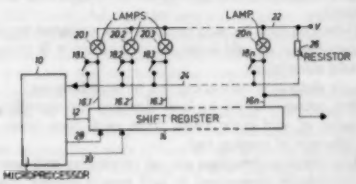


level change between the surfaces of said device when said signals are introduced between said surfaces.

4,484,180
SWITCH CONDITION INDICATOR

Christian J. Deforeit, Trossingen, Fed. Rep. of Germany, assignor to Matth. Hohner AG, Trossingen, Fed. Rep. of Germany

Filed Apr. 27, 1982, Ser. No. 372,309
Claims priority, application Fed. Rep. of Germany, Apr. 29, 1981, 3116941
Int. Cl.³ G08C *9/00*
U.S. Cl. 340—365 S **6 Claims**



1. Apparatus for identifying which of a plurality of switches was last actuated, the switches each having a pair of contacts and being electrically connected in parallel, each of the switches having a light emitter associated therewith, said light emitters each having a pair of terminals, said apparatus comprising:

shift register means, said shift register means having a serial data input terminal and parallel data output terminals, said shift register means further having an erase input and a clock input;

means connecting individual of said shift register means data output terminals to a first contact of a respective switch and to a first terminal of the light emitter associated with the switch;

a power bus, said power bus being connected to second terminals of all of the light emitters;

a signal bus, said signal bus being connected to second contacts of all of the switches;

means for applying a voltage level commensurate with a first number to said signal bus; and

control means, said control means periodically causing application of a voltage level commensurate with a second number to all of said means for connecting said shift register means data output terminals to said first switch contacts, said control means having a control input connected to said signal bus, said control means further having a data output connected to shift register means serial data input terminal, the application of said second voltage level to said signal bus via an actuated switch causing said control means to apply pulses at said first voltage level to

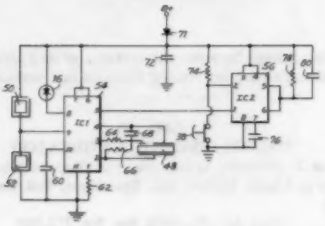
said shift register means serial data input until said first voltage level is re-applied to said signal bus via the actuated switch, the number of applied pulses identifying the actuated switch.

4,484,181

TRAVEL BURGLAR/SMOKE ALARM

Frederic W. Schwartz, Providence, R.I., assignor to Cable Electric Products, Inc., Providence, R.I.

Filed Apr. 19, 1982, Ser. No. 369,445
Int. Cl.³ G08B *19/00, 13/08*
U.S. Cl. 340—521 **6 Claims**



1. A portable alarm apparatus, comprising:
a housing having a power supply and mountable to a door;
a lever pivotably mounted about said housing and biased against a door jamb when said housing is mounted to said door;
a switch carried by said housing and actuated by pivotable movement of said lever when said door is moved from said door jamb;
smoke detection means carried by said housing;
alarm means carried by said housing for signalling movement of said door away from said door jamb and the presence of smoke; and
a dual purpose detection circuit carried by said housing and operatively connected to said power supply, said detection circuit having first and second integrated circuits, said first integrated circuit connected to said second integrated circuit and said switch for enabling said second integrated circuit to activate said alarm when said switch is actuated by said lever movement and enabled said first integrated circuit, and said second integrated circuit connected to said smoke detection means and activating said alarm when said smoke detection means is actuated and enables said second integrated circuit.

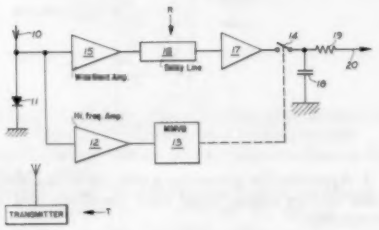
4,484,182

INTRUDER DETECTION APPARATUS FOR FUNCTIONING FREE OF DISTURBANCE WHILE IN CLOSE PROXIMITY TO HIGH-POWER PULSE-MOLDULATED RADARS

Roy A. Schofield, and Edward Wilson, both of Darwen, England, assignors to Shorrock Developments Limited, Blackburn, England

Continuation-in-part of Ser. No. 279,540, Jul. 1, 1981, abandoned. This application Jun. 30, 1983, Ser. No. 509,368
Int. Cl.³ G08B *13/24*
U.S. Cl. 340—552 **1 Claim**

1. Intruder detection apparatus comprising: a transmitter emitting a modulated microwave signal, and a corresponding receiver spaced from and aligned with the transmitter for receiving and monitoring the signal from the transmitter and including alarm means for providing an alarm output upon detection of a change in the monitored signal indicative of an intrusion into the area between transmitter and receiver, said receiver also including eliminator means effective for eliminating any narrow interfering pulses which may be superimposed upon the microwave signal by adjacent radar apparatus and comprising:
a primary high frequency selective amplifier for receiving the detected signal and passing the narrow interfering pulses while substantially rejecting the lower frequency modulation,
a monostable triggered by the output of the primary amplifier for generating a pulse of short duration, of the order of 30 microseconds, corresponding to each interfering pulse,
a normally closed switch controlled by the monostable so as to open for the duration of each monostable pulse,



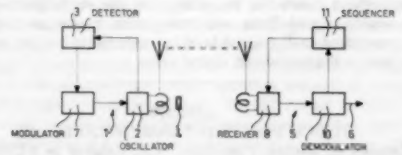
a secondary wide band amplifier for additionally receiving the detected signal,
a delay line for receiving and delaying the secondary amplifier output before the feeding thereof to the normally closed switch, the normally closed switch in the event of radar interference being opened under control of said monostable before each interfering pulse reaches it thereby preventing passage of interfering pulses, and
a capacitor and resistor for feeding the low frequency modulation free of the interfering pulses to the alarm means so that the intrusion detection capability of the apparatus is maintained at all times.

4,484,183

METHOD AND SYSTEM FOR DETECTION OF THE PRESENCE, REMOVAL, OR ABSENCE OF A METAL BODY

Gilles M. Morey, 139 Rue de la Cascade, Crolle 38190 Brignoud, France

Filed Oct. 19, 1981, Ser. No. 313,076
Claims priority, application France, Oct. 20, 1980, 80 22418
Int. Cl.³ G08B *13/26*
U.S. Cl. 340—568 **21 Claims**



1. A method of detecting the presence, removal of absence of a metal body within an area comprising:
altering a magnetic field within the area between a first condition and a second condition in accordance with the presence or absence of a metal body within the area;
coupling the magnetic field to an oscillator circuit to inhibit oscillation of said oscillator circuit in response to the first magnetic field condition and to enable oscillation of said oscillator circuit in response to the second magnetic field condition;
generating a first output signal in response to absence of

oscillation of said oscillator circuit to indicate presence of the metal body within the area, a second output signal in response to oscillation of said oscillator circuit for less than a first preset time to indicate removal of the metal body from the area, and a third output signal in response to oscillation of said oscillator circuit for more than the first preset time to indicate absence of the metal body from the area.

4,484,184

AMORPHOUS ANTIPILFERAGE MARKER

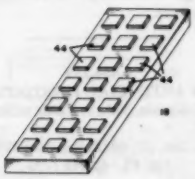
John A. Gregor, Basking Ridge, N.J., and Gregory J. Sellers, Richmond, Va., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 32,196, Apr. 23, 1979, Pat. No. 4,298,862. This application Aug. 13, 1981, Ser. No. 292,456

The portion of the term of this patent subsequent to Nov. 3, 1998, has been disclaimed.

Int. Cl.[3] **G08B** *13/26*

U.S. Cl. 340—572 **8 Claims**



1. For use in a magnetic theft detection system, a marker adapted to generate magnetic fields at frequencies that are harmonically related to an incident magnetic field applied within an interrogation zone and have selected tones that provide said marker with signal identity, and retaining its signal identity after being flexed or bent, said marker comprising an elongated, ductile strip of amorphous ferromagnetic material having a composition consisting essentially of the formula $M_aN_bO_cX_dY_eZ_f$, where M is at least one of iron and cobalt, N is nickel, O is at least one of chromium and molybdenum, X is at least one of boron and phosphorous, Y is silicon, Z is carbon, "a"-"f" are in atom percent, "a" ranges from about 35–85, "b" ranges from about 0–45, "c" ranges from about 0–2.5, "d" ranges from about 12–20.3, "e" ranges from about 0–13 and "f" ranges from about 0–2, and the sum of d+e+f ranges from about 15–25.

4,484,185

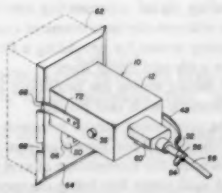
SAFETY PLUG ADAPTER

James D. Graves, 511 W. Stephen St., Martinsburg, W. Va. 25401

Filed Aug. 12, 1983, Ser. No. 522,764

Int. Cl.[3] **G08B** *21/00*; **H01R** *13/62*

U.S. Cl. 340—656 **11 Claims**



1. In combination, an outlet face plate assembly and a safety plug adapter for an electrical outlet box containing at least one receptacle for receiving a single phase, three prong, polarized electric plug, each receptacle having three recessed contacts for engaging the three plug prongs, respectively, the three receptacle contacts including a first contact connected to an energized line of a power system, a second contact connected to a ground line of the power system, and a third contact separately connected to ground, wherein the face plate assembly defines an access opening to each receptacle and includes first and second flanged portions disposed on opposite sides of each access opening and mounting means for securing the face plate to the outlet box, and the safety plug adapter comprises:

an adapter housing formed of electrically-insulating material;

first, second, and third contact prongs, extending outwardly from one end of the housing, which are shaped and spaced relative to one another to engage the first, second, and third receptacle contacts in said electrical outlet box, respectively;

fourth, fifth and sixth contact members secured within the adapter housing at an opposite end thereof from said first, second and third contact prongs and spaced the same as the first, second and third contact prongs, respectively, the adapter housing and the fourth, fifth and sixth contact members constituting another receptacle for receiving a single phase, three prong, polarized electric plug;

a first electrically conductive connecting line for connecting the first contact prong and the fourth contact member, which includes an overcurrent protection means in said first electrically conductive connecting line for opening the first connecting line upon the occurrence of an overcurrent flowing therethrough, and a reset means for resetting said overcurrent protection means upon opening,

second and third electrically conductive connecting lines for connecting the second and third contact prongs with the fifth and sixth contact members, respectively;

first and second resilient engaging means, disposed on opposite sides of the housing, for engaging the safety plug adapter with the face plate, the first and second engaging means having first ends affixed to the housing, and second ends for resiliently engaging the first and second flanged portions, respectively, of the face plate assembly; and

restraining means, affixed to the adapter housing, for holding an electrically insulating cover means against the opposite end of the adapter housing relative to said prongs in a position at which the adapter receptacle openings are covered by the cover means.

4,484,186

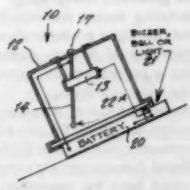
EARTHQUAKE INDICATOR

Lawrence R. Wood, c/o George Spector 3615 Woolworth Bldg. 233 Broadway, and George Spector, c/o Lawrence R. Wood 3615 Woolworth Bldg. 233 Broadway, both of New York, N.Y. 10007

Filed Nov. 20, 1981, Ser. No. 323,659

Int. Cl.[3] **G08B** *21/00*

U.S. Cl. 340—689 **3 Claims**



1. An earthquake indicator, comprising in combination, a circular base, an inverted U-shaped frame affixed on said base, a circular ring supported by strips underneath said frame, and a depending rod from said frame, passing through said ring,

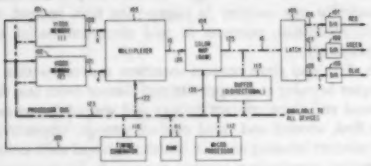
said rod and ring comprising contacts of a switch in a warning electric circuit, a plurality of circles marked upon said base defining earthquake intensities, and means to adjust said indicator.

4,484,187

VIDEO OVERLAY SYSTEM HAVING INTERACTIVE COLOR ADDRESSING

James W. Brown, and William S. Stoddard, both of Indianapolis, Ind., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 25, 1982, Ser. No. 392,001
Int. Cl.³ G09G 1/02, 1/28
U.S. Cl. 340—703 **14 Claims**



1. A digital image display system including first and second video memories for storing picture element data that address colors for presentation at specific locations in a video display, and means for simultaneously accessing picture element data from each video memory for presentation at the same specific location of the video display

CHARACTERIZED BY:

a color map, having input and output ports, for storing digitally encoded colors and providing same at its output port in response to a digital address at its input port, said digital address comprising at least two portions;

means interconnecting the output of the first video memory and the input to the color map such that the picture element data of the first video memory becomes one portion of said digital address;

means interconnecting the output of the second video memory and the input to the color map such that the picture element data of the second video memory becomes another portion of said digital address; and

means responsive to the digitally encoded colors at the output port of the color map for applying same to the video display.

4,484,188

GRAPHICS VIDEO RESOLUTION IMPROVEMENT APPARATUS

Granville E. Ott, Lubbock, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 23, 1982, Ser. No. 371,041
Int. Cl.³ G09G 1/02
U.S. Cl. 340—728 **24 Claims**

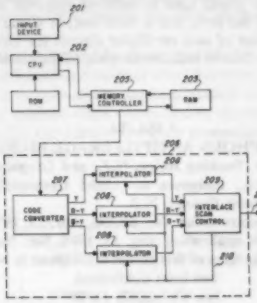
1. A video signal generator comprising:

a scan line generating means for repetitively generating video scan lines having a predetermined scan line period including a plurality of picture elements, each picture element having a predetermined picture element period and at least one video attribute;

a delay means connected to said scan line generating means for delaying video scan lines for one scan line period;

an interpolation means connected to said scan line generating means and said delay means for repetitively generating interpolation scan lines by generating picture elements having at least one video attribute formed by summing and time integrating said at least one video attribute of a picture element of a video scan lines and said at least one video attribute of a corresponding picture element of a delayed video scan line from said delay means; and

a video signal combining means connected to said scan line generating means and said interpolation means for generating a



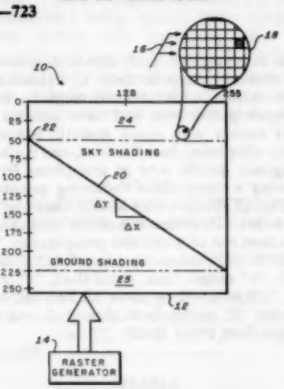
combined video signal including said video scan lines and said interpolation scan lines.

4,484,189

MEMORYLESS ARTIFICIAL HORIZON GENERATOR

Jay R. Dettmer, Columbia, Md., assignor to Sperry Corporation, New York, N.Y.

Filed Jun. 18, 1982, Ser. No. 389,808
Int. Cl.³ G09G 1/16
U.S. Cl. 340—723 **12 Claims**



1. In a display apparatus having display face for displaying thereon sky-ground shading and horizon boundary line between said sky and ground shadings, including means for generating sequential raster lines containing sequential pixels and including processor means for providing an initial crossover word representing the point at which said raster line first crosses said horizon boundary line and providing a slope signal based on the slope of said horizon boundary line and further providing a shading signal representing one of said sky or ground shadings wherein the improvement comprises,

first digital timing means for providing a first digital signal synchronous with said raster lines;

second digital timing means for providing a second digital signal synchronous with said pixels;

transition point computing means responsive to said slope signal for providing in real time a current transition point signal representing the intersection of said horizon boundary line with said raster line being currently generated;

first comparator means responsive to said current transition point signal and to said second digital signal for providing a left-right signal indicating whether said pixel being

currently generated is to the left or to the right of said horizon boundary line;

second comparator means responsive to said first digital signal and to said initial crossover word for providing an above-below signal indicating whether said raster line being currently generated is above or below said horizon boundary line;

logic means responsive to said left-right signal, said above-below signal, said slope signal, and said shading signal for providing a shading control signal representing either of said sky and ground shadings when said raster line prior to said current transition point is being generated and the other of said shadings when said raster line subsequent to said current transition point is being generated.

4,484,190

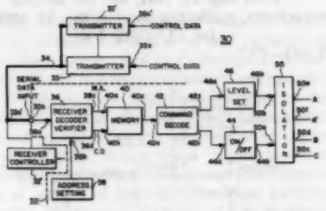
SYSTEM FOR LOAD OUTPUT LEVEL CONTROL

James F. Bedard, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 26, 1981, Ser. No. 267,327

Int. Cl.³ H04Q 9/00; H05B 37/02

U.S. Cl. 340—825.57 **56 Claims**



1. Apparatus for providing a control signal with a variable characteristic to a pair of load input terminals of a load having an output level controlled by the magnitude of the control signal characteristic provided at said input terminals, comprising:

transmitter means at at least one first location for transmitting a data signal containing load output level data;

transmission medium means for conveying said data signal between said at least one first location and a second location;

receiving means at said second location for receiving said data signal; said receiving means comprising address setting means for setting a local address; and decoding means for decoding the address data portion of the received data signal to provide an enabling signal allowing said variable characteristic control signal providing means to operate only if the decoded address data corresponds exactly to the local address set for said second location in said address setting means; and

variable characteristic control signal providing means coupled to said receiving means for providing in electrically isolated manner to said load input terminals a variable characteristic load output level control signal with a magnitude responsive to the load output level data presented at said receiving means.

4,484,191

TACTILE SIGNALING SYSTEMS FOR AIRCRAFT

George S. Vavra, 12420 Saddlehorn Trail, Scottsdale, Ariz. 85259

Filed Jun. 14, 1982, Ser. No. 388,480

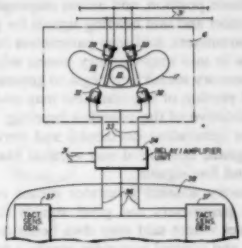
Int. Cl.³ G08B 23/00; H01H 35/02, 35/14

U.S. Cl. 340—965 **1 Claim**

1. A pilot alerting system for aircraft with foot actuated rudder control comprising

means for sensing an uncoordinated flight condition of the aircraft which can be corrected by the application of rudder control, said flight condition sensing means comprising

a ball bank instrument having a ball moveable in a curved transparent tube, said ball occupying a central region of said tube when the aircraft is in a coordinated flight condition and being moveable away from said central region when the aircraft is in an uncoordinated flight condition, and photoelectric means for detecting movement of said ball away from the central region of said tube,



and means controlled by said photoelectric means for indicating to the pilot the direction of application of rudder control to correct the uncoordinated flight condition, said indicating means comprising

a pair of tactile sensation generators located, respectively, in close proximity to the legs of the pilot, each generator, when energized, giving the pilot a tactile indication of the foot to be moved to coordinate the flight condition of the aircraft.

4,484,192

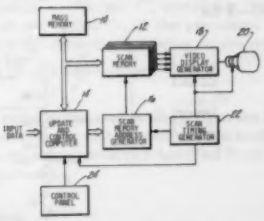
MOVING MAP DISPLAY

William R. Seitz, Royal Oak; Harry R. Farrah, Birmingham, both of Mich.; Gerald A. Brumm; Lansing B. Evans, both of Boca Raton, Fla., and Chris J. Walter, Columbia, Md., assignors to The Bendix Corporation, Southfield, Mich.

Filed Dec. 17, 1981, Ser. No. 331,724

Int. Cl.³ G08G 1/12; G06F 3/14; G08B 7/00

U.S. Cl. 340—995 **54 Claims**



1. A moving map display for a vehicle wherein said vehicle includes means for generating coordinate signals indicative of the vehicle's current longitude and latitude coordinate position, and a heading signal indicative of the vehicle's direction of motion, said moving map display comprising:

mass memory means for electronically storing digital map data indicative of a complete map of the region to be traversed by said vehicle; scan memory means for electronically storing digital map data indicative of a portion of said complete map, said portion covering the immediate area surrounding the vehicle and having a predetermined relationship with respect to said vehicle's current coordinate position;

update and control computer means having adequate storage and computation means, said update and control computer means including means responsive to said coordinate and heading signals for periodically computing a desired map center indicative of the center of the portion of the map stored in said scan memory means, means responsive to a change in said desired map center for generating update parameters for transfering map data from said mass memory means to said scan memory means to maintain said predetermined relationship between the portion of the map stored in said scan memory means and the vehicle's coordinate position, and means responsive to said desired map center and said heading signals for generating refresh scan parameters, said scan parameters including a starting address in said scan memory means where a scan of said scan memory means is to begin to generate a visual display of said portion of the complete map and incremental values indicative of the vehicle's heading;

means for generating horizontal and vertical synchronization signals, horizontal and vertical blanking signals and pixel and line signals;

scan memory address generator means responsive to said update parameters and pixel signals for generating the addresses where said map data being transferred by said update and control computer means is to be stored in said scan memory means, said scan memory address generator means futher responsive to said refresh scan parameters, and said pixel and line signals for systematically generating addresses enabling said scan memory means to output the digital map data in a predetermined sequential order along parallel lines, the angular orientation of which are controlled by said incremental values;

converter means for converting the digital map data output from said scan memory means to analog map data; and

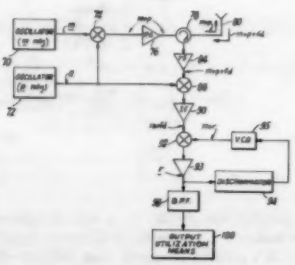
display means responsive to said analog map data and said horizontal and vertical synchronizatin signals and said horizontal and vertical blanking signal for generating a visual map image corresponding to the portion of the map stored in said scan memory means.

4,484,193

RADAR APPARATUS FOR DETECTING AND/OR CLASSIFYING AN AGITATED REFLECTIVE TARGET WHEN RELATIVE TRANSLATION OBTAINS

Francis N. Bellew, South Plainfield, N.J., assignor to Lockheed Electronics Corp., Plainfield, N.J.

Filed Nov. 6, 1975, Ser. No. 629,235
Int. Cl.³ G01S *13/00, 13/52, 13/58*
U.S. Cl. 343—5 SA **14 Claims**



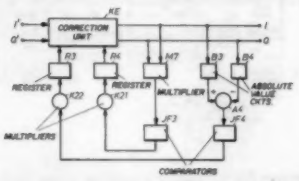
1. In combination in radar apparatus for detecting an agitated, reflective target comprising means for radiating an interrogation wave of radio frequency energy, means for receiving a reflected energy signal ensemble, said reflected signal ensemble including signal components at the radiated wave frequency, a Doppler frequency-shifted frequency which depends upon relative translation between such radar apparatus and the target, and an agitated target signifying signal adjacent in frequency to said Doppler shifted component but remote in frequency from said radiated wave frequency, mixing means for mixing said reflected signal with a local oscillation, band pass filter means connected to said mixing means for extracting from the output of said mixing means a band limited portion of said reflected signal in a fixed, predetermined frequency band, and automatic frequency control means having a frequency sensing input connected to the output of said mixing means for supplying to said mixing means a local oscillation of variable frequency value for shifting said agitated target signaling component of said reflected signal to said fixed, predetermined frequency band independent of the obtaining Doppler frequency shift, and means connected to said band pass filter means to determine the incidence of a detected target from the output of said band pass filter.

4,484,194

ARRANGEMENT IN A RADAR SYSTEM FOR CORRECTION OF PHASE AND AMPLITUDE ERRORS IN A VIDEO SIGNAL

Erik R. Arvidsson, Frölunda, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Aug. 31, 1981, Ser. No. 297,836
Claims priority, application Sweden, Sep. 12, 1980, 8006396
Int. Cl.³ G01S *7/40*
U.S. Cl. 343—17.7 **6 Claims**



1. In the receiver of a coherent radar system, apparatus for generating from an input signal two signals in quadrature which are phase and amplitude corrected comprising: first and second channels, said channels including quadrature detector means receiving the input signal and analog-digital converting means, having outputs, for converting the output of the quadrature detector means to digital values; a correction means having first and second digital value inputs connected to the outputs of said analog digital converting means for receiving the quadrature digital values from said channels, first and second outputs for emitting phase and amplitude corrected quadrature digital values, and first and second modification inputs associated with the two quadrature digital values; and a regulating means having first and second loops, said first loop including first multiplier means connected to the first and second outputs of said correction means for forming products of the emitted quadrature digital values, a first comparator means for emitting first binary values in accordance with the polarity of the products from said first multiplier means, and a first register means for storing said first binary values in order to form a first modification signal related to phase error, said first modification signal being fed to one of said modification inputs in response to the signal generated by said first comparator means, and said second loop including first difference forming means connected to the first and second outputs of said correction means for forming difference values of the emitted quadrature digital values, a second comparator means for emitting second binary values in accordance with the polarity of the difference values and second register means for storing said secondary binary values to form a second modification signal related to amplitude error, said second modification signal being fed to the other of said modification inputs, and said correction unit carrying out a correction of said quadrature digital value in one channel in dependence on said first

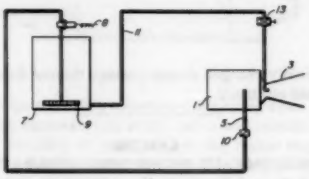
and second modification signals whereby said quadrature digital values in said channels become orthogonal.

4,484,195

METHOD OF SCREENING INFRA-RED RADIATION

Roy E. Shaffer, Bel Air, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 10, 1960, Ser. No. 35,380
Int. Cl.³ C09K 3/30; H01Q 15/18
U.S. Cl. 343—18 B **4 Claims**



1. A method of screening infra-red radiation which comprises forming between the source of said radiation and the point of reception, an aerosol of finely divided, thin, flat, particles of aluminum which is highly reflective and opaque to said radiation, the dimensions of said particles being of the same order of magnitude as the wave lengths of said radiation.

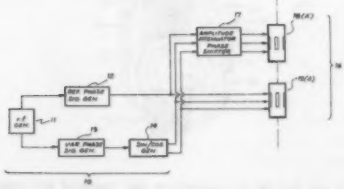
4. A method of preventing the detection of an object emitting infra-red radiation, having wave lengths in excess of 1 micron, which comprises forming adjacent said object a cloud comprising an aerosol of flake-like aluminum particles, said particles having diameters in the range of 2 to 20 microns and thicknesses of less than 3/10 microns, said thicknesses being sufficiently great to render said particles opaque to said radiation.

4,484,196

ANTENNA DRIVE ARRANGEMENT FOR VERY HIGH FREQUENCY OMIDIRECTIONAL RANGE NAVIGATION SYSTEM

James G. Lucas, Wahroonga, and Alan C. Young, West Pennant Hills, both of Australia, assignors to The Commonwealth of Australia

Filed Jul. 6, 1981, Ser. No. 280,174
Claims priority, application Australia, Aug. 1, 1980, PE4821
Int. Cl.³ G01S 1/44
U.S. Cl. 343—404 **10 Claims**



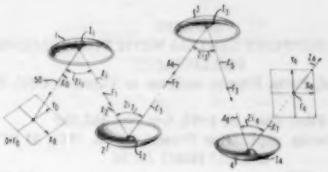
1. A VOR system comprising means for generating a reference phase signal, means for generating variable phase signal components, an antenna array comprising at least two vertically stacked antenna elements located above a ground plane, means for feeding both the reference phase signal and the variable phase signal components to each of the antenna elements, and means for adjusting the amplitude and phase of the signals fed to one or more of the antenna elements relative to the amplitude and phase of the signals fed to the or each other of the antenna elements in a manner such that at least one null is produced in the radiated field H-component which is substantially tangential to a projection of the ground plane.

4,484,197

MULTIBEAM ANTENNA ARRANGEMENT WITH MINIMAL ASTIGNATISM AND COMA

Corrado Dragone, Little Silver, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 25, 1982, Ser. No. 352,389
Int. Cl.³ H01Q 19/19
U.S. Cl. 343—781 P **2 Claims**



1. A multibeam antenna arrangement with minimal primary aberrations due to astigmatism and coma, comprising: a plurality of N sequentially confocal reflectors including $N+1$ separate focal points comprising at least a curved focusing offset main reflector capable of bidirectionally reflecting a beam of radiated electromagnetic energy between the N^{th} and the $N+1$ focal points along a feed axis thereof, and a subreflector disposed along the feed axis of the main reflector comprising a curved reflecting surface capable of bidirectionally reflecting said beam between said N^{th} and an $N-1$ focal points of $N+1$ separate focal points; and

at least one feedhorn disposed at or in the vicinity of a first focal point of said $N+1$ focal points and oriented with a longitudinal axis thereof substantially parallel with an equivalent axis of the plurality of N sequential confocal reflectors, the equivalent axis being an axis of revolution which passes through the first focal point of an equivalent reflecting surface which is capable of producing after a single reflection the same field distribution over the reflected wavefront as that of the plurality of N sequential confocal reflectors

characterized in that

the reflecting surface of each of two of the plurality of N sequential confocal reflectors are deformed with a separate deformation coefficient, C_n specifying the displacement, Z_n, of each point Q_n of the associated reflecting surface in the Z^{th} direction according to the relationship

$$Z_n = C_n P_n$$

where P_n is the radial distance of point Q_n from the Z axis at a focal point of the reflector, and the deformation coefficient for each of the two reflecting surfaces is specified by the relationship

$$-(l_{2n2}-1)^4 C_{n2}\cos^2_{n2} = (l_{2n1}-1)^4 \frac{C_{n1}\cos^2_{n1}}{(M_{n1+1}\cdots M_{n2})^4} =$$

$$\frac{2^2(M-1)}{(M_1\ldots M_{n2})^2} \sum_{s=0}^{n_2-n_1-1} \frac{l_{2(n1+s)}+l_{2(n1+s)-1}}{l_{2(n1+s)}\,l_{2(n1+s)-1}} (M_{n1+s+1}\ldots M_{n2})^2$$

where the magnification of any reflector $M_n = -(l_{2n-2})/(l_{2n-1})$ with l_{2n-1} and l_{2n-2} being the distances along the feed axis of the antenna arrangement to a central point on the reflector from the focal point of the reflector nearest and furthest, respectively, from the first focal point of the antenna arrangement; n_1 and n_2 designate the number of

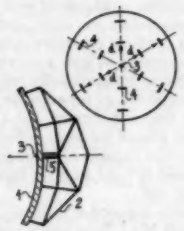
the nearest and furtherest reflector, respectively, along the feed axis from the first focal point of the antenna arrangement to be deformed; i is the angle of incidence of a ray propagating between the two focal points of a reflector which impinges the central point of the reflector n; $(M_{n1+1} \cdots M_{n2})$ represents the product of the magnifications of the reflectors n_1+1 to and including reflector n_2; M is the total magnification of the antenna arrangement; and $(M_1 \ldots M_{n2})$ is the product of the magnifications of the first reflector up to and including the n_2 reflector of the antenna arrangement.

4,484,198

ANTENNA SUPPORT SYSTEM WITH TWO DIMENSION FLEXIBILITY

Jean Georgel, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Mar. 29, 1982, Ser. No. 363,390
Claims priority, application France, Apr. 3, 1981, 81 06768
Int. Cl.³ H01Q *15/16*
U.S. Cl. 343—880 **11 Claims**



1. An ultra-high frequency antenna, comprising:

a mirror;

a support structure for supporting said mirror, said mirror and support having different thermal expansion coefficients; and

connecting members joining said mirror and support; wherein

one connecting member positioned at a reference point is rigid in all directions, and the remaining connecting members are rigid in a first direction coinciding with the normal of the mirror at the point they join with the mirror and are flexible in at least a second direction which is perpendicular to the first, said second direction being along an expansion direction of the mirror which has a different expansion coefficient from that of the support structure with respect to the same expansion direction.

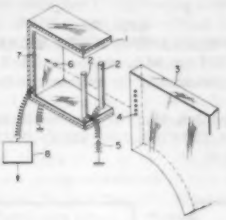
4,484,199

METHOD AND APPARATUS FOR DETECTING FAILURE OF AN INK JET PRINTING DEVICE

Masato Watanabe, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Japan

Filed Mar. 9, 1983, Ser. No. 473,654
Claims priority, application Japan, Mar. 30, 1982, 57-53389; Apr. 8, 1982, 57-59351
Int. Cl.³ G01D *21/00*
U.S. Cl. 346—1.1 **4 Claims**

1. A method of detecting failure of an ink jet printing device to properly jet ink droplets from the nozzles thereof comprising the steps of providing an ink jet head having a plurality of nozzles and a receiving electrode adapted to be struck by the droplets jetted from said nozzles, causing a plurality of pulses to be applied in succession to each of said nozzles causing a corresponding plurality of ink droplets to be jetted successively from each said nozzle, causing each of said droplets to



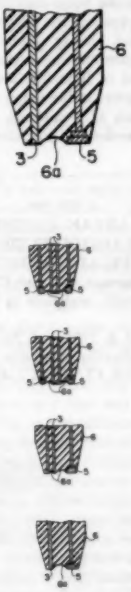
be electrically charged during passage thereof from said nozzles to said electrode.

4,484,200

NON-IMPACT RECORDING APPARATUS

Yukio Tabata, and Toshiyuki Kawanishi, both of Numazu, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 21, 1982, Ser. No. 390,759
Claims priority, application Japan, Jun. 19, 1981, 56-9428
Int. Cl.³ G01D *15/10, 15/24;* B41J *3/20*
U.S. Cl. 346—76 PH **11 Claims**

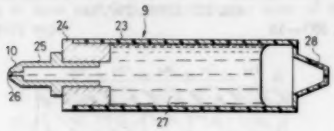


7. In a non-impact recording apparatus having a recording head formed of an electrically insulating material and having a recording electrode formed of a plurality of styli and a return electrode spaced from said styli, said recording electrode and said return electrode being each embedded within said electrically insulating material and having portions exposed on one surface thereof, the improvement wherein portions of said recording head between said recording electrode and return electrode are withdrawn from the plane of the exposed portions thereof to minimize contact with said recording head of any inking ribbon brought between said electrodes.

4,484,201
PEN TYPE RECORDING APPARATUS

Kyuichi Fujisawa, Tonan, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Aug. 20, 1982, Ser. No. 409,866
Claims priority, application Japan, Aug. 21, 1981, 56-122958[U]
Int. Cl.³ G01D 15/00
U.S. Cl. 346—139 C 4 Claims

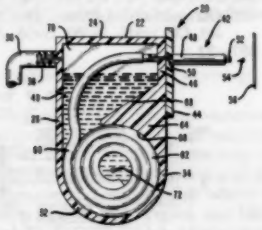


1. A pen type recording apparatus comprising a pen member having a case, means formed at one end of said case for holding a hard ball rotatably in position at its tip, means including a highly-viscous lubricant provided in said case for smoothing the rotation of said ball, means including pressure-sensitive recording paper for receiving data recorded by motion of said paper relative to said pen member in such a way that said ball of said pen member is pressed against said recording paper, means including a pen holder for holding said pen member detachably in a manner capable of extending said pen member onto the pressure-sensitive recording paper, and driving means to cause said pen holder to travel within a predetermined area across said pressure-sensitive recording paper.

4,484,202
COILED CONDUITS WITHIN INK JET RESERVOIR

Steven P. Sayko, Dryden, N.Y., assignor to NCR Corporation, Dayton, Ohio

Filed Sep. 13, 1982, Ser. No. 417,277
Int. Cl.³ G01D 15/18
U.S. Cl. 346—140 R 18 Claims



1. Means for limiting ink movement in an ink jet printing system comprising a

single reservoir containing a supply of ink therein, a

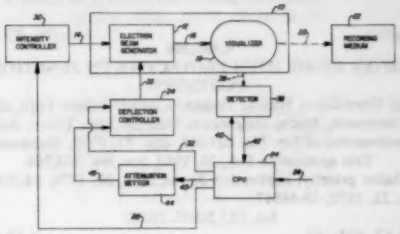
plurality of ink jet elements operably associated with and carried by the reservoir in printing operation, and

a plurality of conduit means coiled within the reservoir and carrying ink therefrom to respective ink jet elements, said reservoir being formed around the conduit means for containment thereof in coiled manner whereby pressure waves within the ink carrying conduit means are absorbed during printing operation.

4,484,203
METHOD AND SYSTEM FOR REGISTRATION IN CRT TYPESETTING

Thomas A. Booth, Flanders, N.J., and Frank L. Scholten, Katonah, N.Y., assignors to AM International, Inc., Chicago, Ill.

Filed Jun. 2, 1982, Ser. No. 384,305
Int. Cl.³ G01D 15/06; G05F 1/00
U.S. Cl. 346—160 28 Claims



19. A system for providing registration of an information defining electron beam with a preselected portion of an electron beam-light emission interface, comprising:

(a) discernible means with said interface for defining a location on said interface having a predetermined spatial relation to said interface portion;

(b) detector means having a field of view inclusive of said discernible means and area of said interface adjacent said discernible means and generating output signals;

(c) a beam deflection controller; and

(d) circuit means connected to said detector means and said controller for operating said controller responsively to said output signals of said detector means.

4,484,204
HEAT-SENSITIVE RECORD MATERIAL

Tohru Yamamoto, Nishinomiya, and Hironari Fujioka, Takatsuki, both of Japan, assignors to Kanzaki Paper Manufacturing Co., Ltd., Tokyo, Japan

Filed Mar. 29, 1983, Ser. No. 479,991
Claims priority, application Japan, Apr. 10, 1982, 57-60226; Jun. 18, 1982, 57-105657
Int. Cl.³ B41M 5/18
U.S. Cl. 346—200 9 Claims

1. A heat-sensitive record material comprising a base sheet and a heat-sensitive record layer formed over the base sheet and containing a color forming material and a color developing material which undergoes a color forming reaction on contact with the color forming material, the heat-sensitive record material being characterized in that a resin coating layer cured with electron beam is formed over the heat-sensitive record layer by applying a coating composition to the record layer and curing the coating with electron beam, the coating composition comprising at least one oligomer liquid at room temperature, capable of giving a uniform smooth uncured resin coating when applied and forming a cured resin film when irradiated with electron beam, and having at least one ethylenically unsaturated bond in the molecule.

4,484,205
HEAT-SENSITIVE RECORDING PAPERS

Yasuhiro Ogata, and Masakazu Maekawa, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 21, 1982, Ser. No. 435,803
Claims priority, application Japan, Oct. 21, 1981, 56-168139
Int. Cl.³ B41M 5/22
U.S. Cl. 346—200 10 Claims

1. A heat-sensitive recording paper, comprising:

a support base paper comprised of pulp having a Canadian standard freeness (JIS, P8121) of 400 cc or more; and

a heat-sensitive color forming layer formed on a surface of the support base paper, the color forming layer comprising an electron donating colorless dye and an electron accepting compound.

4,484,206

ZENER DIODE WITH PROTECTIVE PN JUNCTION PORTIONS

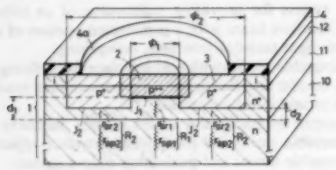
Heiji Moroshima; Hajime Terakado, and Hideharu Fujii, all of Yamanashi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 029,055, Apr. 11, 1979, abandoned. This application Feb. 26, 1982, Ser. No. 352,764

Claims priority, application Japan, Mar. 30, 1978, 53-36886; Apr. 21, 1978, 53-46547

Int. Cl.³ H01L *29/90*

U.S. Cl. 357—13 **6 Claims**



1. A semiconductor device comprising:

a semiconductor substrate of a first conductivity type having opposite first and second major surfaces;

a highly doped semiconductor region of a second conductivity type opposite to said first conductivity type formed in said semiconductor substrate, and extending into said semiconductor substrate from said first major surface, said highly doped semiconductor region having a bottom portion which forms a first PN junction with said semiconductor substrate, said first PN junction having a breakdown voltage;

a lightly doped semiconductor region of the second conductivity type formed in said semiconductor substrate, adjoining and surrounding said highly doped semiconductor region, and extending into said semiconductor substrate from said first major surface, said lightly doped semiconductor region having a bottom portion which forms a second PN junction with said semiconductor substrate;

a first electrode formed on said first major surface and contacting said highly and lightly doped semiconductor regions; and

a second electrode formed on said second major surface and contacting said semiconductor substrate,

wherein a total first spreading resistance of said semiconductor substrate between the entire bottom portion of the highly doped semiconductor region and said second electrode is greater than a total second spreading resistance of said semiconductor substrate between the entire bottom portion of the lightly doped semiconductor region and said second electrode, and wherein the breakdown voltage of said second PN junction is selected to be a voltage higher than the breakdown voltage of said first PN junction, but lower than a total voltage of said breakdown voltage of the first PN junction plus a voltage drop across said first spreading resistance caused by a maximum allowable current through said PN junction above which a current value causes the permanent destruction of said first PN junction.

4,484,207

STATIC INDUCTION TRANSISTOR AND SEMICONDUCTOR INTEGRATED CIRCUIT USING HETERO-JUNCTION

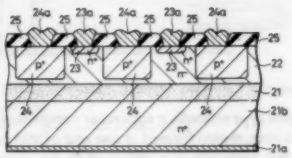
Jun-ichi Nishizawa; Tadahiro Ohmi, and Nobuo Takeda, all of Sendai, Japan, assignors to Zaidan Hojin Handotai Kenkyu Shinkokai, Sendai, Japan

Continuation of Ser. No. 239,645, Mar. 2, 1981,. This application Jul. 26, 1983, Ser. No. 517,381

Claims priority, application Japan, Mar. 4, 1980, 55-27613

Int. Cl.³ H01L *29/161*

U.S. Cl. 357—16 **5 Claims**



1. A hetero-junction static induction transistor, comprising:

a source semiconductor region;

a drain semiconductor region, said source and drain regions having a first conductivity type and a high impurity concentration;

a gate semiconductor region having a second conductivity type opposite to said first conductivity type and a high impurity concentration;

a channel semiconductor region having a high resistivity; and

a built-in depletion layer extending across and completely depleting said channel region, said source region and said gate region each having a band gap greater than that of said channel region and forming a hetero-junction with said channel region.

4,484,208

JUNCTION-TYPE FIELD-EFFECT TRANSISTOR AND ITS MANUFACTURE

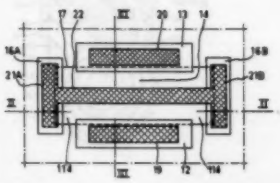
Jacques Thiré, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 161,850, Jun. 23, 1980, abandoned. This application Oct. 11, 1983, Ser. No. 540,706

Claims priority, application France, Jun. 29, 1979, 79 16970

Int. Cl.³ H01L *29/80, 29/06, 29/90*

U.S. Cl. 357—22 **3 Claims**



1. A junction field effect transistor which comprises a semiconductor body having a major surface, a surface-adjacent semiconductor layer of a first conductivity type, spaced-apart and parallel source and drain zones of a second conductivity type opposite to that of the first in said semiconductor layer, a surface-adjacent layer-shaped gate region of said first conductivity type, and a layer-shaped channel region of said second conductivity type beneath said gate region, said gate region and said channel region both extending laterally to said source and drain zones, said gate region forming part of a first semiconductor zone of said first conductivity type and said channel

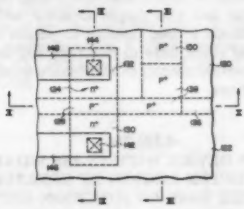
region forming part of a second semiconductor zone of said second conductivity type, said first and second semiconductor zones being formed by ion implantation through the same mask, said first and second semiconductor zones extending longitudinally beyond said parallel source and drain zones in a direction parallel to said source and drain zones and being substantially longitudinally coextensive, and said gate region being connected to said semiconductor layer by at least one highly doped connection zone of said first conductivity type adjoining at least said first semiconductor zone of the first conductivity type.

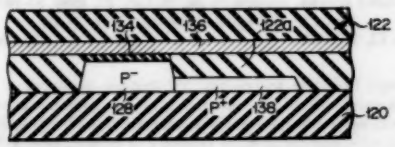
4,484,209

SOS MOSFET WITH THINNED CHANNEL CONTACT REGION

Yukimasa Uchida, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Oct. 20, 1981, Ser. No. 313,338
Claims priority, application Japan, Dec. 12, 1980, 55-175304
Int. Cl.³ H01L *29/78, 27/02*
U.S. Cl. 357—23 **17 Claims**





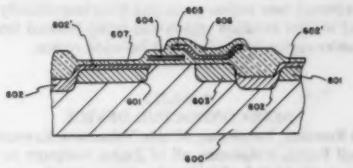
1. A MOS type semiconductor device comprising:
an insulating layer;
a MOS type element including a first semiconductor layer formed on said insulating layer, said semiconductor layer having a substrate region of one conductivity type in which a channel is formed and further having an impurity region of an opposite conductivity type which is completely divided by said substrate region, said MOS type element further including an electrode formed on said first semiconductor layer with a first insulation film interposed therebetween; and
a second semiconductor layer formed on said insulating layer alongside said first semiconductor layer, said second semiconductor layer having a smaller height than said first semiconductor layer as measured from the surface of said insulating layer, said second semiconductor layer being of the same conductivity type as said substrate region and being connected to at least said channel of said substrate region at an end of said channel which is exposed intermediate said divided impurity region, said substrate region being adapted to receive a constant potential supplied through said second semiconductor layer.

4,484,210

SOLID-STATE IMAGING DEVICE HAVING A REDUCED IMAGE LAG

Hiromitsu Shiraki; Nobukazu Teranishi, and Yasuo Ishihara, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Aug. 31, 1981, Ser. No. 297,759
Claims priority, application Japan, Sep. 5, 1980, 55-123258; Sep. 5, 1980, 55-123259; Oct. 2, 1980, 55-138026
Int. Cl.³ H01L *29/78, 27/14, 31/00*
U.S. Cl. 357—24 **1 Claim**



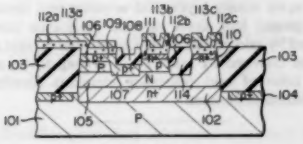
1. The solid-state imaging device comprising a semiconductor substrate of one conductivity type having an impurity concentration in the order of 1 to 10×10^{14} cm^{-3}, a plurality of light-charge converter regions of the other conductivity type having an impurity concentration of 10^{15} to 10^{18} cm^{-3}, said light-charge converter regions being arrayed in a matrix form of rows and columns, a plurality of surface regions of said one conductivity type having an impurity concentration which is higher than the impurity concentration of said light-charge converter regions, said surface regions being disposed at the surface of said light-charge converter regions, charge transfer gate sections disposed parallel to columns of said light-charge converter regions, CCD charge transfer sections disposed parallel to said charge transfer gate sections, shift register means for receiving charges from said CCD charge transfer sections, and charge-voltage converter means for deriving a voltage signal in response to quantities of charges transferred along said shift register.

4,484,211

OXIDE WALLED EMITTER

Toyoki Takemoto, Kyoto; Tsutomu Fujita, Osaka; Hiroyuki Sakai, Osaka, and Haruyasu Yamada, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 231,460, Feb. 4, 1981, abandoned. This application Oct. 17, 1983, Ser. No. 542,555
Int. Cl.³ H01L *27/04, 29/04, 29/72*
U.S. Cl. 357—50 **7 Claims**



1. A semiconductor integrated circuit device comprising:
a bipolar transistor in which contiguous active and external base regions and an emitter region are formed in a semiconductor island, said active base region being disposed immediatly below said emitter region, said island forming a collector region isolated from another element by a first isolation region comprising insulating material;
side surfaces of a conduction path of said external base region being surrounded by said first isolation region and a second isolation region comprising insulating material

formed in said island; said second isolation region and a third isolation region formed in said island cooperating with each other to surround the side walls of said emitter region;

the junction between said emitter region and said active base region terminating against said second isolation region and said third isolation region at locations above the bottom of said second isolation region and said third isolation region;

side surfaces of a conduction path of said collector region being surrounded by said first isolation region and isolated from said emitter region by said third isolation region formed in said island;

said external base region extending from immediately below said second isolation region and being isolated from said emitter region by said second isolation region.

4,484,212

SEMICONDUCTOR DEVICE

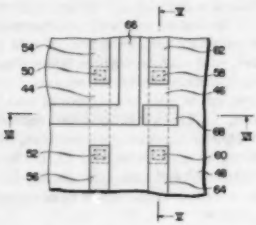
Shigeru Komatsu, Yokohama; Michio Nakamura, Kawasaki, and Katsuji Fujita, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 29, 1981, Ser. No. 335,712

Claims priority, application Japan, Jan. 14, 1981, 56-4327

Int. Cl.³ H01L *29/84, 27/02, 23/48, 29/44*

U.S. Cl. 357—51 **18 Claims**



1. A semiconductor device comprising:

a semiconductor substrate having at least two resistor elements formed therein, wherein said resistor elements formed therein have a specific resistance ratio relative to each other;

an insulation layer formed on a major surface of said semiconductor substrate;

a circuit wiring layer formed on said insulation layer, covering a portion of said insulation layer which corresponds to at least one of said resistor elements; and

a dummy wiring layer formed on said insulation layer, covering that portion of said insulation layer which corresponds to the resistor element or elements not covered by said circuit wiring layer, and wherein said circuit wiring layer causes less stress on said resistance element not covered by said circuit wiring layer than on said resistance element covered by said circuit wiring layer, said resistance ratio of said resistance elements formed therein being stress-dependent.

4,484,213

BINARY WEIGHTED RESISTOR AND PACKAGE

Dennis M. Franklin, Jensen Beach, Fla., assignor to Solitron Devices, Inc., Port Salerno, Fla.

Filed Feb. 19, 1982, Ser. No. 350,209

Int. Cl.³ H01L *27/02, 23/48;* **H01C** *10/00*

U.S. Cl. 357—51 **4 Claims**

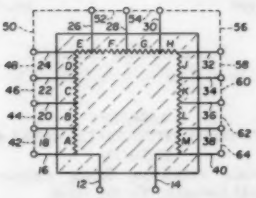
1. A binary weighted resistance comprising:

a substrate;

a thin film resistance formed on said substrate and having an input terminal, an output terminal and a plurality of discrete portions, each portion having a specified impedance such that said specified impedances relate to one another in a binary sequence;

a lead frame having pin connections for connecting corresponding ones of said plurality of discrete portions such that a first series circuit from said input terminal through said plurality discrete portions to said output terminal is formed;

shunt links on said lead frame connected between corresponding ones of said pin connections such that a second



series circuit from said input terminal to said output terminal is formed parallel to said first series circuit; and

a plastic housing encapsulating said substrate, said thin film resistance and a portion of said lead frame, such that said input terminal and said output terminal and said shunt links are external to said housing to permit selective removal of said shunt links to interrupt said second series circuit for external control of said binary sequency of said discrete portions.

4,484,214

PN JUNCTION DEVICE WITH GLASS MOATS AND A CHANNEL STOPPER REGION OF GREATER DEPTH THAN THE BASE PN JUNCTION DEPTH

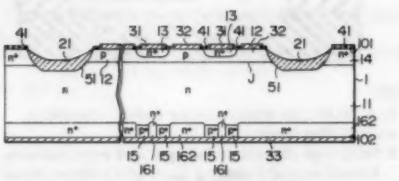
Yutaka Misawa, Katsuta; Masaaki Takahashi, and Hiroaki Hachino, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 21, 1981, Ser. No. 332,713

Claims priority, application Japan, Oct. 27, 1980, 55-149453

Int. Cl.³ H01L *29/34, 27/04, 29/74, 29/06*

U.S. Cl. 357—52 **26 Claims**



17. A gate-turn-off thyristor device formed in an n type high resistivity silicon substrate having a first and a second major surface, comprising:

a first base region of p type singly and uniformly diffused from the first major surface and forming a substantially flat base pn junction with the n type substrate;

a first emitter region of n type selectively doped in the first base region from the first major surface and forming a first emitter pn junction with the first base region;

a second emitter region of p type singly and uniformly diffused from the second major surface and forming a second emitter pn junction with the n type substrate, the first base region and the second emitter region having substantially the same thickness;

a second base region formed of the n type substrate;

a channel stopper region highly diffused from the first major surface with n type impurity to have an impurity concen-

tration larger than that of the first base region, disposed around the first base region in a closed loop shape, and having a diffusion depth larger than that of the first base region to form a boundary with said second base region deeper than said base pn junction;

a moat of closed loop shape formed in the first major surface between said first base region and said channel stopper region to extend through said first base and said channel stopper regions into the second base region, the moat having an inclined inner side surface at which said base pn junction terminates to form a negative bevel structure, a bottom surface of said moat contacting the second base region, and an inclined outer side surface at which the boundary of said channel stopper region and said second base region terminates; and

fired glass filler applied in the moat, covering the surface of the moat, and having a negative charge which enhances extension of a depletion region in the second base region.

4,484,215

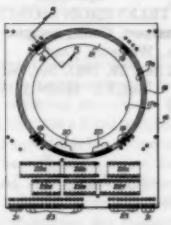
FLEXIBLE MOUNTING SUPPORT FOR WAFER SCALE INTEGRATED CIRCUITS

Nicholas L. Pappas, Sunnyvale, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 264,978, May 18, 1981, abandoned. This application Dec. 8, 1983, Ser. No. 546,407

Int. Cl.³ H01L *39/02, 23/28, 25/04, 23/48*

U.S. Cl. 357—80 **6 Claims**



1. A mounting support for transferring electrical signals between said support and the frontside surface of an integrated circuit wafer while exposing nearly all of the wafer's frontside and backside surfaces to a cooling medium for maximum heat transfer comprising:

a top planar member, a bottom planar member, and a central planar member which is laminated between said top and bottom planar members;

said central planar member having conductors on the surface that is laminated to said top planar member and having an aperture of a first diameter that is large enough to receive said wafer;

said bottom planar member having an aperture of a second diameter that is slightly smaller than said first diameter, is concentric with the aperture of said central planar member, and exposes the entire backside surface of said wafer to said cooling medium except for the periphery thereof which is supported by said bottom member around its aperture; and

said top planar member having an aperture of a third diameter that is slightly larger than said first diameter, is concentric with the aperture of said central member, and exposes the entire frontside surface of said wafer to said cooling medium as well as portions of the conductors on said central member to enable electrical connections to be made between said wafer and said exposed conductor portions on said central member.

4,484,216

METHOD AND CIRCUIT FOR DYNAMIC CROSS COLOR SUPPRESSION IN COLOR TELEVISION SET

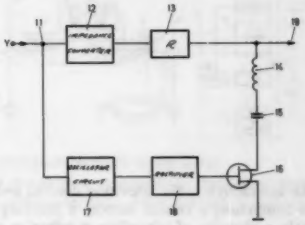
Rainer Rumland, Rosstal, Fed. Rep. of Germany, assignor to Grundig E. M. V., Fuerth/Bay, Fed. Rep. of Germany

Filed May 13, 1982, Ser. No. 377,975

Claims priority, application Fed. Rep. of Germany, May 16, 1981, 3119653

Int. Cl.³ H04N *9/535*

U.S. Cl. 358—39 **3 Claims**



1. A suppression circuit for suppressing cross color interference created by luminance signals in the frequency range of color carrier signals, said suppression circuit comprising: a resonant circuit; a voltage divider circuit; and a variable resistor in said voltage divider circuit responsive to a control signal from said resonant circuit; whereby said resonant circuit generates the control signal controlling the operation of the variable resistor in the voltage divider circuit so as to suppress luminance signals that are in the color carrier frequency range.

4,484,217

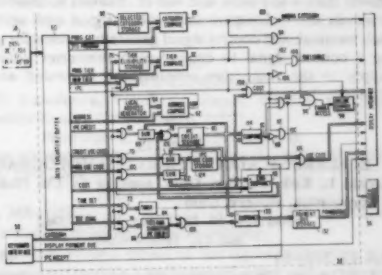
METHOD AND SYSTEM FOR REMOTE REPORTING, PARTICULARLY FOR PAY TELEVISION BILLING

Robert S. Block, Marina Del Ray, and John M. Lull, Fullerton, both of Calif., assignors to Telease, Inc., Los Angeles, Calif.

Filed May 11, 1982, Ser. No. 377,080

Int. Cl.³ H04N *7/18*

U.S. Cl. 358—84 **47 Claims**



1. A method for providing subscription services involving transmissions from a remote location to a subscriber location and for which payment is required for access, the method comprising the steps of:

(a) transmitting a cost signal containing a charge associated with the transmissions;

(b) storing a credit at the subscriber location;

(c) comparing the magnitude of the charge contained in the cost signal with the magnitude of the stored credit; and,

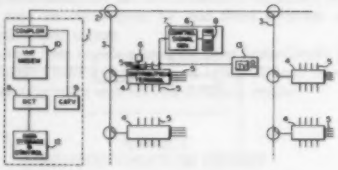
(d) enabling access by the subscriber to the transmissions associated with the cost signal in response to the relative magnitudes of the charge and stored credit.

4,484,218

VIDEO DISTRIBUTION CONTROL SYSTEM

Peter Boland, Nepean; John Coyne, Winnipeg, and Irving Gimple, Montreal, all of Canada, assignors to The Manitoba Telephone System, Winnipeg, Canada

Filed Apr. 29, 1981, Ser. No. 258,560
Claims priority, application Canada, Apr. 30, 1980, 350914
Int. Cl.³ H04N 7/18
U.S. Cl. 358—86 **9 Claims**



1. An interactive cable television control and transmission system comprising a central station, a plurality of subscriber terminals, a plurality of subscriber distribution terminals each including a plurality of separate subscriber drops each for connection to a respective one of a plurality of the subscriber terminals, and a tree-type transmission connecting said central station to each of said distribution terminals, each of said central station, said distribution terminals and said subscriber terminals including means for transmitting and receiving digital signals whereby data from each subscriber terminal can be communicated to said central station said central station also comprising a source of television signals arranged in a plurality of separate channels, and means for developing for each subscriber terminal a list of channels accessible by that terminal, each said subscriber terminal comprising a television terminal, manually operable means for designating a required one of the television channels and means for generating a digital channel request signal dependent upon said required channel, each said subscriber distribution terminal comprising a plurality of television converters each connected to a respective subscriber drop for transmitting to the respective terminal a television channel, microprocessor means arranged to repeatedly transmit to each subscriber terminal in turn a digital signal requesting said digital channel request signal, to receive from said central station and store said lists of channels accessible by the terminals and to compare said request signal with said list for each terminal, and control signal generating means for generating a control signal to control each converter whereby to supply to the respective terminal the requested accessible channel.

4,484,219

ELECTRONICALLY GENERATED HOLOGRAPHY

Ronald L. Kirk, Findlay, Ohio, assignor to The Holotronics Corporation, Findlay, Ohio

Filed Jun. 16, 1982, Ser. No. 389,042
Int. Cl.³ H04N 9/54
U.S. Cl. 358—90 **46 Claims**

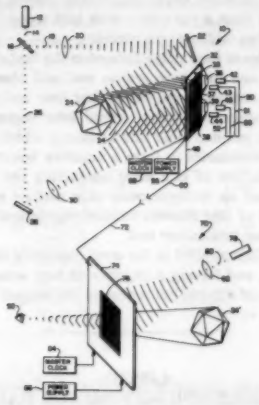
1. A system for generating electric signals corresponding with a holographic representation of an object, comprising:

means for providing a coherent source of light;

means for illuminating said object with said coherent source of light;

means for providing a reference beam from said coherent source of light;

image receiving means having a receiving surface oriented for receiving light reflecting from said illumianted object and, simultaneously from said reference beam to form an interference pattern, said receiving means having a matrix of predetermined aperture defining locations at said receiving surface, each electrically addressable in a select scan sequence to effect generation of an electrical data signal of amplitude corresponding with the intensity of said light interference pattern at said addressed aperture defining location; and



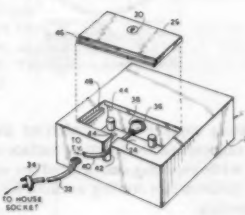
control means for electrically addressing said matrix of aperture defining location in accordance with said select scan sequence at a predetermined scanning rate and for providing a scanning synchronization signal.

4,484,220

TELEVISION MONITOR

Mike Beetner, Westport, Conn., assignor to Idea Research Development Corp., Westport, Conn.

Filed Sep. 29, 1981, Ser. No. 306,862
Int. Cl.³ H04N 5/44
U.S. Cl. 358—190 **4 Claims**



1. A monitor for restricting the operating time of electronic apparatus accessible to children comprising:

a sensor of power flow to said apparatus;

a timer presettable to a predetermined amount of said operating time, said timer being activated by said sensor upon a sensing of said power flow;

means for switching said power, said switching means being responsive to a timing signal of said timer for terminating said power flow upon the conclusion of said predetermined operating time;

means coupled to said timer for presetting the length of said operating time;

wherein said timer comprises a counter counting down in response to clock pulses incident upon said counter, and wherein said presetting means comprises:

an up-down counter, a pulse generator, and switching means coupling pulses of said generator to said up-down counter; said pulse switching means including switch contacts for activating an up-down control terminal of said up-down counter; said presetting means further including means for enabling a presetting of said down counter, said up-down

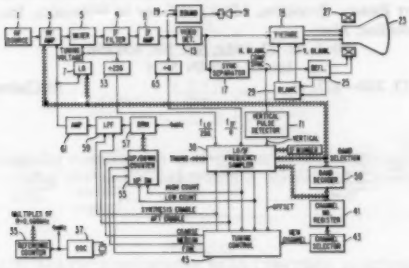
counter being coupled to a preset terminal of said down counter whereby the starting count of said down counter is preset to the value of the output count of said up-down counter.

4,484,221

SHARED COUNTER ARRANGEMENT FOR A DIGITAL FREQUENCY LOCKED LOOP TUNING SYSTEM FOR SELECTIVELY MEASURING THE FREQUENCIES OF THE LO AND IF SIGNALS

Juri Tults, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 1, 1982, Ser. No. 413,762
Int. Cl.³ H04N 5/44; H04B 1/16
U.S. Cl. 358—191.1 **7 Claims**



1. In a receiver of the type including an RF input for providing a plurality of RF signals corresponding to respective channels; an RF stage for selecting one of the RF signals corresponding to a selected channel a local oscillator for generating a local oscillator (LO) signal having a frequency corresponding to said selected channel; and a mixer for combining said selected RF signal and said local oscillator (LO) signal to produce an IF signal having at least one information bearing carrier, apparatus for measuring the frequencies of said LO signal and said IF carrier comprising:

counting means having a clock input for counting cycles of an input signal coupled to said clock input;

coupling means for coupling said LO signal and said IF carrier to said clock input of said counting means;

counter enabling means coupled to said coupling means for selectively enabling said counter means to count cycles of either said LO or said IF carrier in response to LO and IF "count enabling" signals occurring during LO and IF measurement intervals, respectively;

count presetting means coupled to said counting means for selectively presetting said counting means to either a first predetermined initial count related to a desired frequency of said LO signal or a second predetermined initial count related to a desired frequency of said IF carrier in response to LO and IF "presetting" signals occurring prior to corresponding LO and IF measurement intervals, respectively;

count evaluating means coupled to said counting means for generating a count deviation signal representing the relationship of the count of said counting means at the end of each of said LO and IF measurement intervals to the same predetermined final count in response to LO and IF "sampling" signals occurring after the ends of said corresponding LO and IF measurement intervals, respectively; and

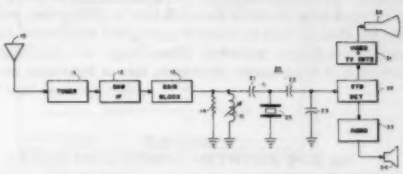
frequency measurement enabling means for selectively generating either said LO "presetting", "count enabling" and "sampling" signals or said IF "presetting", "count enabling" and "sampling" signals.

4,484,222

INTERMEDIATE FREQUENCY CIRCUIT WITH SOLID STATE TRAP

Frank G. Banach, Oak Lawn, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Nov. 1, 1982, Ser. No. 437,934
Int. Cl.³ H04N 5/50
U.S. Cl. 358—196 **5 Claims**



1. A color television receiver comprising:

tuner means developing intermediate frequency signals including a video carrier, a color subcarrier and an audio carrier;

intermediate frequency amplifier means including a SAW filter introducing substantial attenuation of said intermediate frequency signals;

a detector for demodulating said video carrier, said detector requiring suppression of said audio carrier to within a narrow range of amplitudes to preclude demodulation distortion between said carriers and to enable recovery of said audio carrier;

a non adjustable solid state audio carrier trap having a fixed Q and resonant impedance; and

means for coupling said solid state trap between said amplifier means and said detector for suppressing said audio carrier to within said range without substantially affecting the Q of said trap.

4,484,223

IMAGE SENSOR

Tokuichi Tsunekawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 3, 1981, Ser. No. 269,804
Claims priority, application Japan, Jun. 12, 1980, 55-79257; Mar. 31, 1981, 56-47612
Int. Cl.³ H04N 3/15
U.S. Cl. 358—213 **24 Claims**

1. A radiation sensing system comprising:

(A) radiation sensing means of the signal integrating type arranged to produce a dark current signal and a radiation sensing signal containing the dark current signal;

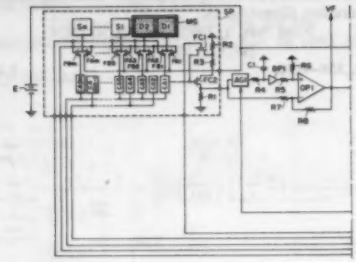
(B) means for conducting dark current compensation on said radiation sensing signal on the basis of said dark current signal and for producing a dark current compensated sensing signal;

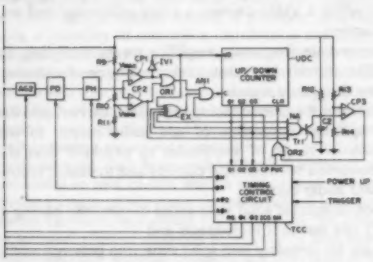
(C) means for controlling a signal integrating time of said sensing means on the basis of said dark current compensated sensing signal;

(D) means for detecting the condition that the dark current compensated sensing signal is below a predetermined level while the signal integrating time remains unchanged; and

(E) means for resetting the signal integrating time of said sensing means from a previously set time to a shorter time, said resetting means including a timer circuit and being

arranged to reset the signal integrating time, responsive to detection of said condition by said detecting means for a





period determined by said timer circuit while the signal integrating time remains unchanges.

4,484,224

PULSE GENERATING CIRCUIT FOR A TELEVISION CAMERA USING SOLID STATE IMAGE SENSOR

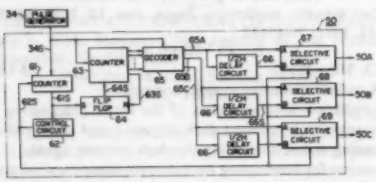
Kazuhiro Sato, Tokyo; Nobuo Murata, Komae; Kenji Takahashi, Kodaira, and Shusaku Nagahara, Hachioji, all of Japan, assignors to Hitachi, Ltd. and Hitachi Denshi Kabushiki Kaisha, both of Tokyo, Japan

Filed May 4, 1982, Ser. No. 374,871

Claims priority, application Japan, May 6, 1981, 56-66932

Int. Cl.³ H04N *3/14, 5/04*

U.S. Cl. 358—213 **2 Claims**



1. A solid state television camera with solid state image sensor for converting an optical image into electrical signals, comprising:

a pulse generator for generating a train of pulses with a frequency equal to the horizontal scanning frequency of a television system;

a frequency divider for frequency-dividing the pulse train into a signal with a frequency substantially equal to the vertical scanning frequency alternately in two modes of 1/n and 1/n+1 (where n is a positive integer); and

a selective circuitry for forming a train of pulses with a desired vertical scanning frequency on the basis of the pulse trains derived from said pulse generator and said frequency divider, said selective circuitry including gate means for allowing the output pulses from said pulse generator to pass therethrough for a given time according to the output pulses from said frequency divider, a delay circuit for delaying the output signal from said gate means by a $\frac{1}{2}$ horizontal scanning time, and means for alternatively selecting the output signals delivered from said gate means and said delay circuit in accordance with the output of said frequency divider.

4,484,225

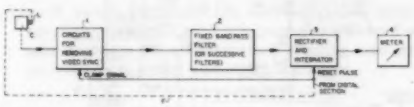
ELECTRONIC FOCUSING METHOD AND APPARATUS FOR TELEVISION PICK-UP CAMERAS AND THE LIKE

Robert Bishop, Brookline, Mass., assignor to Beltronics, Inc., Brookline, Mass.

Filed Jul. 22, 1982, Ser. No. 400,896

Int. Cl.³ H04N *5/26*

U.S. Cl. 358—227 **10 Claims**



1. A method of focusing a television pick-up camera and the like, that comprises, converting an optical image focused by a lens upon a pick-up camera into a corresponding television-like raster video signal; producing digital timing pulses; removing video synchronization information and discontinuities caused thereby from the video signal under the control of the timing pulses; passing the sync-free video signal through bandpass filtering adjusted to have a relatively broad skirt and peaking steeply below the television signal cut-off frequency; converting the bandpass voltage output to a current and rectifying the same to develop a current into a capacitance that integrates the same into a voltage periodically under the control of said timing pulses discharging said capacitance to indicate a measure of the average value of amplitude of signal; and varying the lens focusing to maximize signal amplitude to attain sharp focus.

4,484,226

AUTOMATIC KINESCOPE BIAS CONTROL SYSTEM COMPENSATED FOR KINESCOPE ELECTRON GUN CONDUCTION DISSIMILARITIES

Robert P. Parker, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 14, 1982, Ser. No. 434,328

Int. Cl.³ H04N *9/20, 9/535, 5/68*

U.S. Cl. 358—242 **8 Claims**

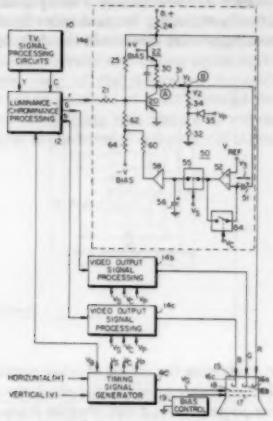
1. In a video signal processing system including an image reproducing device having an electron gun comprising an intensity control electrode, automatic bias control apparatus comprising:

means for deriving a signal representative of the magnitude of black image current conducted by said electron gun during bias control intervals;

means for providing an auxiliary signal proportional to the bias of said electron gun during image blanking bias control intervals;

control means, responsive to said derived signal and to said auxiliary signal, for developing a bias control voltage as a

function of the magnitudes of both said derived signal and said auxiliary signal; and



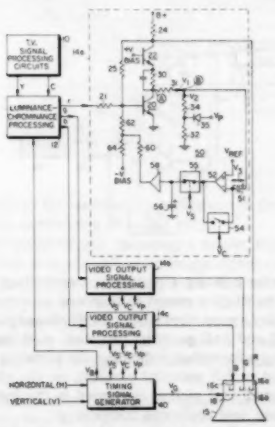
means for coupling said control signal to said image reproducing device for maintaining a correct black current level.

4,484,227

AUTOMATIC KINESCOPE BIAS CONTROL SYSTEM COMPENSATED FOR SENSE POINT IMPEDANCE VARIATIONS

James C. Tallant, II, and James Hettiger, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 14, 1982, Ser. No. 434,329
Int. Cl.³ H04N 5/68, 9/535
U.S. Cl. 358—242 **9 Claims**



1. In a video signal processing system including an image reproducing device responsive to video signals supplied to an intensity control electrode thereof, automatic bias control apparatus comprising:

means for deriving a signal representative of the black image current level conducted by said intensity control electrode during bias control intervals, said deriving means exhibiting a variable output impedance related to the bias of said intensity control electrode;

sampling amplifier means with an input and an output, for providing an output bias correction signal to said image reproducing device for maintaining a correct black current level in response to signals applied to said input;

means for generating an auxiliary control signal having a prescribed magnitude and sense;

a capacitor for coupling said derived representative signal and said auxiliary signal to said input of said sampling amplifier means; and

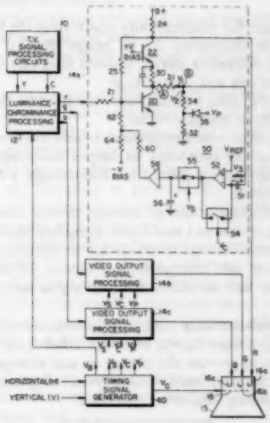
an impedance for coupling said derived representative signal from said output of said deriving means to said capacitor, said impedance being large relative to said variable output impedance for significantly reducing impedance variations presented to said generating means from said output of said deriving means.

4,484,228

SIGNAL PROCESSING NETWORK FOR AN AUTOMATIC KINESCOPE BIAS CONTROL SYSTEM

Robert P. Parker, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 14, 1982, Ser. No. 434,314
Int. Cl.³ H04N 5/68, 9/16
U.S. Cl. 358—243 **14 Claims**



1. In a video signal processing system including an image reproducing device responsive to video signals supplied to an intensity control electrode thereof, automatic bias control apparatus comprising:

means for deriving a periodic signal representative of the black current level conducted by said intensity control electrode during video signal image blanking intervals, said derived signal having a magnitude other than zero when said black current level is correct;

information storage means;

amplifier means with a signal input, and an output coupled to said storage means for modifying the information content of said storage means in accordance with the conductive condition of said amplifier means in responsive to applied input signals;

input signal coupling means for coupling said derived signal to said amplifier input;

means for providing a periodic auxiliary signal to said input signal coupling means with a magnitude and sense for substantially negating the response of said amplifier to the magnitude of said derived signal when the magnitude of said derived signal is representative of a correct black current level; and

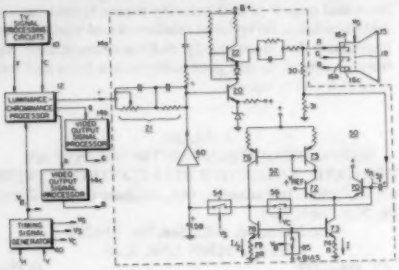
means for supplying a bias correction voltage derived from said storage means to said image reproducing device for maintaining a correct black current level.

4,484,229

AUTOMATIC KINESCOPE BIAS CONTROL SYSTEM WITH SELECTIVELY DISABLED SIGNAL PROCESSOR

Robert P. Parker, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 29, 1982, Ser. No. 437,831
Int. Cl.³ H04N 5/68, 9/535
U.S. Cl. 358—243 4 Claims



1. In a system for automatically controlling the level of black image current conducted by an image display device, said system being operative during control intervals within image blanking intervals and comprising:

means for deriving a signal representative of the magnitude of said black image current;

signal sampling means responsive to said derived representative signal for providing an output bias control signal to said image display device for maintaining a desired black current level;

means, including a charge storage device coupled to said deriving means and said signal sampling means, operative during said control intervals for developing a reference voltage on said charge storage device for establishing a reference bias condition for said signal sampling means; and

means for substantially inhibiting currents conducted by said sampling means during intervals other than said control intervals, to prevent the charge on said storage device and thereby said reference voltage from being modified significantly during said other intervals.

4,484,230

IMAGE REPRODUCTION METHOD AND APPARATUS

Peter C. Pugsley, Pinner, England, assignor to Crosfield Electronics Limited, London, England

Filed Jan. 29, 1982, Ser. No. 344,157
Claims priority, application United Kingdom, Feb. 4, 1981, 8103457
Int. Cl.³ H04N 1/40
U.S. Cl. 358—284 12 Claims

1. A method of making a defect-free reproduction of an image, comprising:

storing signal values for all picture elements of the image to be reproduced;

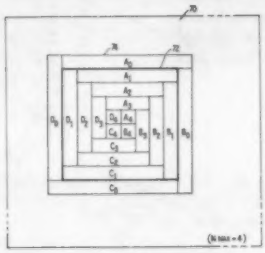
identifying picture elements for which the signal values are defective;

and replacing each stored defective value of a picture element by a value derived from a neighbouring picture element; and in which the replacement is effected by:

for an area smaller than the image, which area has been indicated as including a defect-containing region, comparing the image values of picture elements in a region of the said area, but outside the defect-containing region, to ascertain the range of the values of picture elements in a defect-free region in the neighbourhood of the defect-containing region;

examining image values for picture elements in the defect-containing region by comparing them with the said range of values to ascertain whether any such picture element has a value differing sharply from the said range of values;

for any picture element having a sharply differing value, automatically replacing the said value by the value of a neighbouring picture element in the defect-free region;



thereafter, examining the values of other picture elements in the defect-containing region and similarly automatically replacing those which differ sharply from the range of values in the neighbouring defect-free region until the whole of the defect-containing region has been examined;

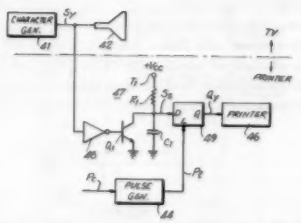
and using the stored corrected image-representing picture element values in an image-reproduction process to make the defect-free reproduction.

4,484,231

PRINTING APPARATUS

Yasuhito Eguchi, Ebina, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 29, 1981, Ser. No. 306,766
Claims priority, application Japan, Sep. 30, 1980, 55-136847
Int. Cl.³ H04N 1/22, 1/40; G01D 15/10
U.S. Cl. 358—296 8 Claims



1. Apparatus for printing a picture corresponding to a picture displayed by display means in response to a transmitted signal, said display means displaying said displayed picture as a plurality of full and half pictorial elements, said transmitted signal containing information indicating the presence of a half pictorial element, a full pictorial element, or the absence of either, and wherein said picture is printed in the form of full pictorial elements, said apparatus comprising:

integration means for integrating said transmitted signal and having a time constant;

the integrated transmitted signal having a first characteristic indicative of the presence of a half pictorial element in said transmitted signal and a second characteristic indicative of the presence of a full pictorial element in said transmitted signal;

means for generating a latch signal having a predetermined phase relation to said integrated transmitted signal;

latch means for latching said integrated transmitted signal in response to said latch signal supplied thereto so as to

produce an output signal, said latch signal causing said latch means to latch said integrated transmitted signal at regular times determined by said time constant and said predetermined phase relation such that said latch means produces said output signal only when said integrated transmitted signal, at the time of latching, has said second characteristic, whereby said output signal corresponds to that portion only of the integrated transmitted signal indicative of the presence of a full pictorial element; and

printer means for printing said picture in response to said output signal in the form of full pictorial elements.

4,484,232

METHOD AND CIRCUIT ARRANGEMENT FOR CONTRAST INTENSIFICATION

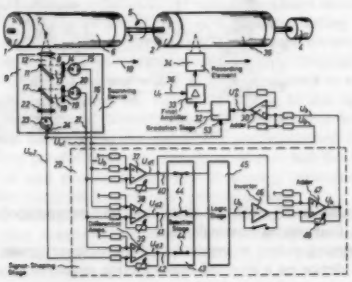
Uwe Gast, Rammsee, Fed. Rep. of Germany, assignor to Dr. Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

Filed Sep. 22, 1982, Ser. No. 421,232

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1981, 3139483

Int. Cl.³ H04N *1/40*

U.S. Cl. 358—299 **19 Claims**



1. A method for contrast intensification in the reproduction of a master, comprising the steps of:

(a) opto-electronically scanning a master image point-wise and line-wise to produce an image signal representing the brightness of an image point, a first outer field signal representing the mean brightness of a first scanning area larger than the image point, and a second outer field signal representing the mean brightness of a second scanning area about the image point and larger than the first scanning area;

(b) forming a first differential signal from the image signal and the first outer field signal;

(c) forming a second differential signal from the image signal and the second outer field signal;

(d) forming a third differential signal from the first and second outer field signals;

(e) combining the first differential signal with at least one of the second and third differential signals to produce an auxiliary signal;

(f) adding the first differential signal and the auxiliary signal to produce a correction signal; and

(g) superimposing said collection signal to said image signal.

4,484,233

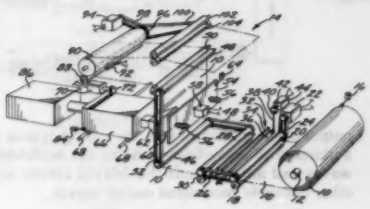
HIGH SPEED, HIGH RESOLUTION PROGRAMMABLE MULTIFORMATTING HARDCOPY VIDEO PRINTER

Emery G. Strout, Huntington Beach, and Armen N. Mancini, Fountain Valley, both of Calif., assignors to Schiff Photo Mechanics, Santa Ana, Calif.

Filed Sep. 30, 1982, Ser. No. 431,262

Int. Cl.³ H04N *1/24*

U.S. Cl. 358—302 **12 Claims**



1. A method for printing video images on a multi-image hard copy comprising the steps of:

controllably positioning a photosensitive medium in contact with a flat rectangular fiber optic faceplate on a cathode ray tube wherein said faceplate includes a phosphor thereon;

selectively activating said phosphor on said fiber optic faceplate in response to a video signal applied to said cathode ray tube to generate a corresponding lumininescent pattern of a complete image on said faceplate;

exposing said photosensitive medium to said pattern generated on said faceplate to permanently imprint the complete image of said pattern on said photosensitive medium in contact with said faceplate;

selectively shifting said photosensitive medium relative to said faceplate in each of two different directions to a plurality of different relative positions and exposing said photosensitive medium to a complete image on said faceplate in at least some of said positions to produce an array of multiple complete images on a single section of said medium;

moving said medium to a means for developing and fixing said pattern imprinted in said medium into a permanent, visual image; and

delivering said developed and fixed medium for visual user inspection, whereby a video signal corresponding to said complete image is coupled to said cathode ray tube and imprinted on said medium to produce a permanent visual image therein through the use of a phosphor-bearing fiber optic faceplate in contact with said medium to produce a high resolution hard copy image at high speeds.

4,484,234

VIDEO TAPE RECORDING AND REPRODUCING APPARATUS

Kenji Kimura, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 122,180, Feb. 19, 1980, abandoned. This application Mar. 16, 1982, Ser. No. 358,577

Claims priority, application Japan, Feb. 20, 1979, 54-18741

Int. Cl.³ H04N *5/92*

U.S. Cl. 358—340 **4 Claims**

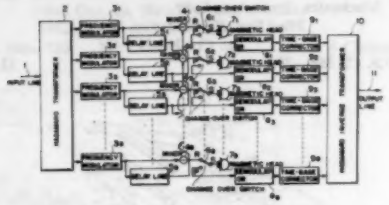
1. A video-tape recording and reproducing apparatus comprising:

a system to transform a field signal into a multi-channel signal;

a plurality of modulators to produce modulated carrier waves, modulated by each of the multi-channel signals;

a system to provide a fixed time delay of the modulated carrier waves, and also to mix the delayed carrier wave

into the modulated carrier waves of neighbouring channels as a cancellation signal for cross talk current; and a multi-channel head for recording and reproducing the



output of the mixing system, the mixing system including a plurality of delay lines to delay the modulated carrier waves, and mixers to mix the delayed carrier waves with other channels' modulated carrier waves.

4,484,235

PHASE CONTROL CIRCUIT AND MAGNETIC REPRODUCING APPARATUS USING THE SAME

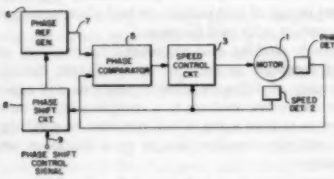
Nobuyoshi Yokobori, Osaka; Masashi Urayama, Neyagawa, and Yoshiaki Igarashi, Ikoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 18, 1981, Ser. No. 275,027

Claims priority, application Japan, Jun. 19, 1980, 55-83811; Jun. 20, 1980, 55-84323

Int. Cl.³ G11B *21/10*; H04N *5/76*

U.S. Cl. 360—10.2 **20 Claims**



1. A phase control circuit, comprising:

a speed control means for controlling the rotational speed of a rotating apparatus;

a phase control means for controlling the rotational phase of said rotating apparatus so as to have a constant difference from a phase of a reference signal by comparing said rotational phase and said reference signal's phase; and

a phase shift circuit means for shifting the phase of said reference signal, said phase control means including said speed control means, said phase of said reference signal being shifted according to a temporary speed change of said rotating apparatus so as to maintain said phase locked during and after said speed change.

4,484,236

MAGNETIC TAPE RECORDING AND REPRODUCING ARRANGEMENTS

James H. Wilkinson, Tadley, Near Basingstoke, England, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 17, 1982, Ser. No. 442,265

Claims priority, application United Kingdom, Nov. 20, 1981, 8135045

Int. Cl.³ G11B *5/52*

U.S. Cl. 360—10.3 **8 Claims**

1. A magnetic tape recording and reproducing arrangement comprising: a rotary drum, helical scan digital video tape recorder including:

first and second head assemblies mounted diametrically opposite one another on a rotary drum;

said first head assembly including first and second magnetic transducer heads having respective transducer gaps of opposite azimuth angle, and third and fourth magnetic transducer heads having respective transducer gaps of opposite azimuth angle to said first and second heads respectively;

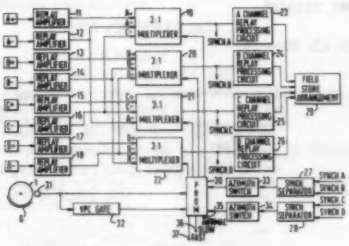
said second head assembly including fifth and sixth magnetic transducer heads having respective transducer gaps of opposite azimuth angle, and seventh and eighth magnetic transducer heads having respective transducer gaps of opposite azimuth angle to said fifth and sixth heads respectively; and

tape guide means to wrap a magnetic tape more than 180° around said drum;

in recording operations

said first head assembly through said first and second heads and said second head assembly through said fifth and sixth heads alternatively recording pairs of skew tracks on said tape such that said tracks alternate in azimuth angle, and each of said first, second, fifth and sixth heads recording video data in a said track for not more than 180° of each complete rotation of the drum and further data in said track for some further part of each complete rotation of the drum, said further part lying wholly beyond said video data;

means to derive respective reproduced signals from all said heads;



multiplexer means to distribute said reproduced signals to four output channels; and

control means to control said multiplexer means in dependence on a selected reproduction mode;

in a normal reproduction mode

said control means controlling said multiplexer means to distribute the reproduced signals comprising said video and further data from said first, second, fifth and sixth heads to said four channels respectively;

in a slow shuttle mode

said control means controlling said multiplexer means to distribute the reproduced signals comprising only said video data from said first or second, said third or fourth, said fifth or sixth and said seventh or eighth heads to said four channels respectively during the intervals when one only of said head assemblies is reading said video data, and during intervals when one of said head assemblies is reading said video data and the other of said head assemblies in reading said further data, said control means controlling said multiplexer means to pass the reproduced said video data from said one head assembly to two of said channels and to pass the reproduced said further data from said other head assembly to the other two of said channels; and

in a fast shuttle mode

said control means controlling said multiplexer means to distribute the reproduced signals comprising said video data only from said first or second, said third or fourth, said fifth or sixth and said seventh or eighth heads to said four channels respectively.

4,484,237
APPARATUS FOR AUTOMATICALLY SETTING THE OPTIMUM PERFORMANCE CHARACTERISTICS OF A TAPE RECORDER

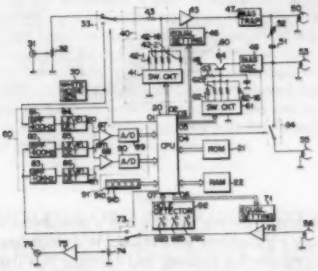
Kenji Muto, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jan. 4, 1982, Ser. No. 336,763

Claims priority, application Japan, Jan. 14, 1981, 56-4284; Jan. 14, 1981, 56-4285; Jan. 14, 1981, 56-4286

Int. Cl.³ G11B *15/02, 5/45*

U.S. Cl. 360—25 **7 Claims**



1. A tape recorder comprising:

a recording head and a playback head;

a recording level setting circuit for setting a level of an input signal to be supplied to said recording head for recording the input signal on a magnetic tape;

a test signal source, which is to be connected to said recording level setting circuit during an automatic setting of optimum performance characteristics in the tape recorder, to produce a test signal over a certain range of frequency;

deviation detecting means, which is to be connected to said playback head during the automatic setting of the optimum performance characteristics, for detecting a level deviation between the test signal of a predetermined first frequency produced by said test signal source and the test singal of said predetermined first frequency reproduced from the magnetic tape by said playback head;

automatic setting instruction means including a recording instruction manipulating means for operating the automatic setting of the optimum performance characteristics upon its manipulation;

standard level setting means for setting a certain standard recording level in said recording level setting circuit;

an erase head placed downstream of said playback head in the tape running direction for erasing the test signal recorded on the magnetic tape during the automatic setting of the optimum performance characteristics in the tape recorder; and

means for performing the automatic setting of the optimum performance characteristics comprising:

connection means responsive to the operation of said automatic setting instruction means, for connecting said test signal source to said recording level setting circuit and for connecting said playback head to said deviation detecting means; and

signal operation correction means including a calculation means for calculating a level setting correction amount based upon said level deviation of said deviation detecting means and further including a storage means for storing said level setting correction amount, wherein said signal operation correcting means provides a single output for correcting said standard recording level set in said recording level setting circuit to the optimum recording level of said magnetic tape wherein said automatic setting performing means further comprises a means responsive to the output of said correction means for disconnecting said test signal from and connecting the input signal normally to be recorded to said recording level setting circuit.

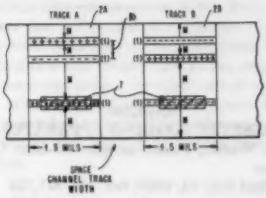
4,484,238
DUAL TRACK MAGNETIC RECORDING METHOD

Albert W. Vinal, Cary, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 15, 1982, Ser. No. 388,783

Int. Cl.³ G11B *5/09*

U.S. Cl. 360—47 **4 Claims**



1. A magnetic recording method, comprising steps of:

writing a magnetizable magnetic medium with two tracks of magnetic polarities to represent data by simultaneously polarizing said tracks on said medium with laterally adjacent corresponding areas thereof having complementary magnetic poles whose combined track to track properties represent data.

4,484,239
MINIATURE CASETTE TAPE RECORDER-PLAYER

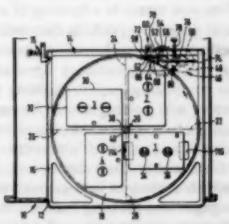
Horst Timm, Hildesheim, Fed. Rep. of Germany, assignor to Blaupunkt-Werke GmbH, Hildesheim, Fed. Rep. of Germany

Filed Mar. 4, 1982, Ser. No. 354,728

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1981, 3110480

Int. Cl.³ G11B *15/68*

U.S. Cl. 360—92 **19 Claims**



1. A small-cassette magnetic tape recorder-player having a cassette tape drive capable of operating with tape transport in either direction for cassettes of substantially oblong rectangular contour, comprising:

a cassette magazine insertable in and removable from a sheath therefor in the structure of said recorder-player, said magazine having a turntable which is rotatable about a pivot engageable at its center and means for carrying four cassettes on said turntable while maintaining them in rectangular windmill arm array at small spacing from each other about said center (20), so that diameters of said turntable which are perpendicular to each other pass between adjacent cassettes and substantially bisect said gaps, each of said gaps being bounded by a long contour side of one cassette and a short contour side of another cassette;

means for locking said magazine in said sheath in response to full insertion of the magazine;

means for releasing said magazine from said sheath, and

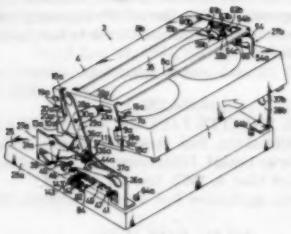
means for rotating said turntable of said magazine, when the latter is locked in said sheath, for a part of a revolution at a time for successively placing the several cassettes on said turntable in operative relation with said tape drive, while said cassettes remain in said windmill configuration as viewed parallel to an axis through said center (20) perpendicular to said turntable.

4,484,240

CASSETTE LOADING APPARATUS

Shuji Yoshida, Warabi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 11, 1982, Ser. No. 347,786
Claims priority, application Japan, Feb. 14, 1981, 56-20390
Int. Cl.[3] G11B *15/66*
U.S. Cl. 360—96.5 14 Claims



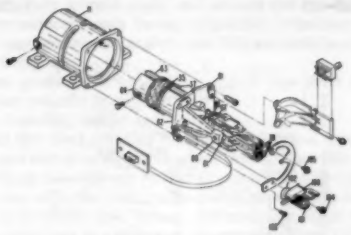
1. In an apparatus for recording and/or reproducing signals on a tape wound on reel means in a housing of a cassette when the cassette is in an operative position determined by engagement of the cassette housing with locating means on a chassis of the recording and/or reproducing apparatus: a cassette loading apparatus comprising cassette holding means; mounting means supporting said holding means for movements relative to said chassis between a cassette-receiving position remote from said chassis and in which a cassette can be inserted in, and removed from said holding means, and a cassette-loading position in which a cassette in a correct position in said holding means engages said locating means and is disposed by the latter in said operative position, said mounting means including an element constrained to move in a prescribed path upon said movement of the holding means from said cassette-receiving position to said cassette-loading position; and a detecting lever pivoted on said holding means and having one end portion with an inclined edge which, in a first angular position of said detecting lever, is engageable by said moveable element of the mounting means upon movement of said element in said prescribed path for angularly displacing said detecting lever to a second angular position permitting further movement of said movable element along said path, and a sensing portion on said detecting lever which is free to move with the latter from said first angular position to said second angular position when said cassette is in said correct position in respect to said holding means and which is blocked by said cassette to prevent movement of said detecting lever from said first angular position to said second angular position upon deviation of said cassette from said correct position and thereby preventing movement of said holding means to said cassette-loading position.

4,484,241

AUTOMATIC LOCK FOR HEAD-CARRIAGE ASSEMBLY IN A DISK FILE

Arthur P. Brende, Byron, and Jerry L. Neubauer, Stewartville, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 17, 1982, Ser. No. 378,970
Int. Cl.[3] G11B *5/54*
U.S. Cl. 360—105 10 Claims



1. In an actuator having a frame and a transducer carriage for positioning a transducer with respect to a recording media,

a lock mechanism for holding said carriage in a fixed position relative to said frame, comprising:

a pin member fixed to said frame and movable from a first position engaging said carriage to restrain movement thereof to a second position clear of said carriage to allow movement thereof,

spring means biasing said pin member toward said first position,

solenoid means having a magnetic coil and an armature means mechanically coupled to said pin member,

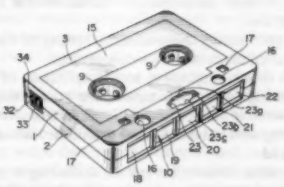
means for energizing said solenoid in response to a signal indicating a predetermined velocity of said media relative to said transducer to move said pin member from said first position to said second position.

4,484,242

TAPE GUIDE FOR TENSIONING TAPE AND REGULATING THE RUNNING THEREOF IN A SMALL OR MINI-CASSETTE

Masanori Kimizuka, and Nobuyuki Idei, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 6, 1982, Ser. No. 366,249
Claims priority, application Japan, Apr. 11, 1981, 56-52548[U]
Int. Cl.[3] G11B *15/60, 23/02*
U.S. Cl. 360—130.21 12 Claims



1. In a small tape cassette comprising a cassette body including upper and lower halves defining upper and lower substantially rectangular walls and a peripheral wall having portions extending between said rectangular walls at the front, back and opposite sides of the cassette body, a pair of laterally spaced apart reel hubs rotatably mounted within said cassette body and having a magnetic tape wound thereon, and guide elements permanently in said cassette body and leading said tape

between the reel hubs in a run extending along the inside of said portion of the peripheral wall at the front of the cassette body;

said portion of the peripheral wall at the front of the cassette body having a plurality of windows spaced apart therealong for exposing said tape in said run therebehind, said upper and lower walls having pairs of aligned openings therethrough at laterally spaced apart locations in back of said run of the tape and registering with respective ones of said windows so that, when the tape cassette is in use in a tape recorder, each of said pairs of openings can receive a capstan against which the tape in said run is engaged by a pinch roller inserted rearwardly through said respective one of the windows, a pair of aligned apertures in said upper and lower walls, respectively, extending back of said run between said pairs of openings and which, in said use in a tape recorder, are adapted to receive tape guide means of the latter engageable with the tape from outside of said cassette body, and pairs of aligned holes in said upper and lower walls adapted, in said use in such tape recorder, to receive positioning pins for locating the cassette relative to the tape guide means.

4,484,243

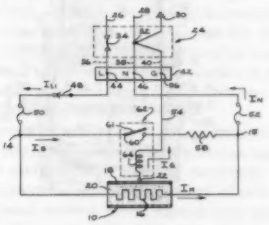
PROTECTIVE CIRCUIT ARRANGEMENT FOR A SHEATHED HEATING ELEMENT

LeRoy J. Herbst, Monroe, Conn.; Robert K. Hollenbeck, Louisville, Ky.; John M. Hooker, Louisville, Ky.; Thomas E. Jenkins, Louisville, Ky.; John L. Preher, Louisville, Ky., and Jimmy R. Rickard, Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Sep. 30, 1982, Ser. No. 430,901

Int. Cl.³ H02H *3/14*

U.S. Cl. 361—50 **9 Claims**



8. A protective circuit arrangement comprising:

a heating unit comprising a resistive heating element encased in a ceramic filled conductive sheath, said resistive element including a pair of terminals for connecting said element to an external power supply of the type having a pair of supply lines comprising a power line and a neutral line;

first fuse means for serially connecting one of said element terminals to one of the supply lines;

second fuse means serially connecting the other one of said element terminals to the other one of the supply lines;

each of said first and second fuse means being characterized by a threshold current versus response time function and operative when actuated to interrupt current to said heating element, each of said fuse means being actuated when the current therethrough is sustained at a level at least equal to a threshold level for a period of time at least equal to the response time associated with that current threshold level in accordance with the current versus time function;

shunt circuit means comprising a relatively low resistance shunt current path switchably connected in parallel circuit with said heating element operative when connected in parallel circuit to increase the level of current in the supply lines to a level sufficient to actuate at least one of said first and second fuse means;

ground current circuit means coupling said sheath to an external ground providing a ground current path therebetween, shunting said second fuse means the level of current in said ground current path comprising the difference between the current in the power line and the current in the neutral line;

switch means responsive to ground current in said ground current path and operative to switch said shunt current path in parallel circuit with said heating element when ground current exceeds a predetermined ground current threshold level;

said ground current threshold level being selected such that the response time associated with the level of current in the power line is less than the response time associated with the level of current in the neutral line, whereby that one of said first and second fuse means connected to the power line opens before the other one of said fuse means thereby effectively decoupling the power line from the heating unit when a ground fault is detected regardless of which side of said heating element is connected to the power line.

4,484,244

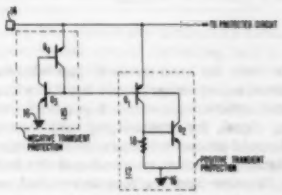
PROTECTION CIRCUIT FOR INTEGRATED CIRCUIT DEVICES

Leslie R. Avery, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 22, 1982, Ser. No. 421,517

Int. Cl.³ H02H *9/00, 9/04, 3/22*

U.S. Cl. 361—56 **8 Claims**



1. A protection circuit for protecting integrated circuit devices against voltage transients, comprising:

a terminal;

a sole source of reference potential:

conductive means for connecting the terminal to the integrated circuit to be protected;

first circuit connected between the conductive means and the sole source of reference potential for protecting the integrated circuit against negative voltage transients;

second circuit means connected between the conductive means and the sole source of reference potential for protecting the integrated circuit against positive voltage transients; and

both the terminal and conductive means formed on and both the first and second circuit means formed within a single isolated region in a semiconductor body.

4,484,245

DIRECTIONAL COMPARISON BLOCKING PROTECTIVE RELAY SYSTEM

John D. McFall, Auburn Township, Cuyahoga County, Ohio, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 17, 1983, Ser. No. 505,163

Int. Cl.³ H02H *3/30*

U.S. Cl. 361—68 **17 Claims**

1. A protective relay system for opening a local circuit interrupter at the local terminal and a remote circuit interrupter at the remote terminal of a protected line segment of an ac electrical power network when a fault occurs on the protected line segment, said protective relay system comprising:

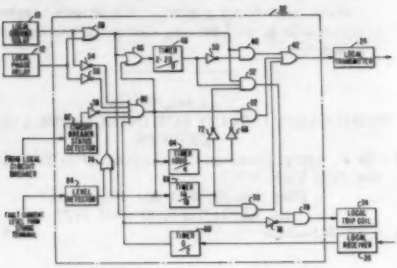
local fault detector means for determining the direction to the fault;

remote fault detector means for determining the direction to the fault;

local logic means for transmitting a local blocking signal to the remote terminal when the fault is in the forward direction from the local terminal, wherein said local blocking signal is transmitted for a first predetermined duration;

remote logic means for transmitting a remote blocking signal to the local terminal when the fault is in the forward direction from the remote terminal, wherein said local blocking signal is transmitted for said first predetermined duration;

wherein said local logic means is responsive to said remote blocking signal, for transmitting said local blocking signal for a second predetermined duration when said remote blocking signal is received and the fault is in the reverse



direction from the local terminal, and wherein said local logic means is responsive to said local blocking signal;

wherein said remote logic means is responsive to said local blocking signal, for transmitting said remote blocking signal for said second predetermined duration when said local blocking signal is received and the fault is in the reverse direction from the remote terminal, and wherein said remote logic means is responsive to said remote blocking signal;

local trip means for tripping the local circuit interrupter when the fault is in the forward direction from the local terminal and said local and remote blocking signals are not received by said local logic means;

and remote trip means for tripping the remote circuit interrupter when the fault is in the forward direction from the remote terminal and said local and remote blocking signals are not received by said remote logic means.

4,484,246

RECLOSING DEVICE FOR TRANSMISSION LINE

Fumio Andow, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 21, 1981, Ser. No. 265,845

Claims priority, application Japan, May 31, 1980, 55-73168

Int. Cl.³ H02H *7/26*

U.S. Cl. 361—71 **7 Claims**

1. A reclosing device for a transmission line comprising:

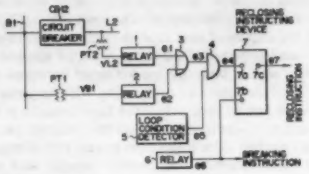
first means for obtaining a positive-phase voltage of a transmission line terminal involved in a fault with said transmission line having other terminals;

second means for judging whether or not said positive-phase voltage exceeds a predetermined value during the fault;

third means for judging whether or not reclosing of the other terminals of said transmission line have been successfully performed;

fourth means for, when said predetermined value is judged by said second means to have been exceeded, reclosing said transmission line terminal; and

fifth means for, when said predetermined value is judged by said second means not to have been exceeded, reclosing said transmission line terminal only if said other terminals



are judged by said third means to have been successfully reclosed.

4,484,247

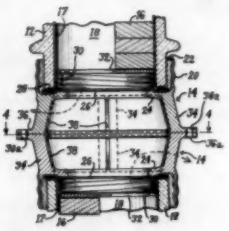
NONFRAGMENTING STATION ARRESTER

Robert E. Koch, and Earl W. Stetson, both of Pittsfield, Mass., assignors to General Electric Company, King of Prussia, Pa.

Filed Mar. 9, 1984, Ser. No. 587,758

Int. Cl.³ H02H *1/04*

U.S. Cl. 361—128 **4 Claims**



1. A high voltage lightning arrester comprising, in combination:

A. an insulative ceramic housing;

B. a column of nonlinear resistance valve elements situated within said housing, the arrester internal air space remaining in said housing having a cross-sectional area at the ends of said housing greater than the cross-sectional area of said valve element column;

C. an ablative heat shield liner overlying the interior surface of said housing;

D. a frangible diaphragm sealing off each end of said housing; and

E. an electrode end structure secured to each end of said housing, at least one of said end structures including

(1) a metallic sleeve receiving an end of said housing,

(2) an annular mounting ring adapted for bolted physical connection with the mounting ring of another like lightning arrester for applications where plural such arresters are stacked one atop the other, and

(3) a plurality of legs projecting from said sleeve for supporting said ring in spaced relation to the end of said housing, the spaces between said legs providing lateral venting ports having a cummulative cross-sectional area at least three times greater than that of the internal air space.

4,484,248
MAGNETIC RECORDING TAPE CARTRIDGE

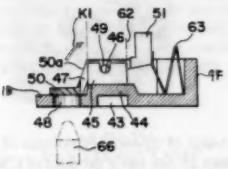
Kenji Ogiro, Yokohama, and Shinichi Gotoh, Kyoto, both of Japan, assignors to Hitachi Maxell, Ltd., Osaka and Hitachi, Ltd., Tokyo, both of, Japan

Filed Jul. 28, 1981, Ser. No. 287,800

Claims priority, application Japan, Jul. 28, 1980, 55-105598[U]; Jul. 28, 1980, 55-105599[U]; Jul. 28, 1980, 55-105601[U]; Sep. 2, 1980, 55-125456[U]; Sep. 2, 1980, 55-125427[U]

Int. Cl.³ G11B *23/02*

U.S. Cl. 360—132 **11 Claims**



1. A magnetic recording tape cartridge comprising:

a bottom section and a top section assembled together by fastening means so as to provide a cartridge case having a front wall with a plurality of openings formed therein, said cartridge case defining a tape chamber for containing a magnetic recording tape wound around at least one reel housed in said tape chamber, with a portion of said recording tape being stretched along a predetermined intermediate path defined by said front wall;

a lid member comprising an engaging member projected from said lid member, a front portion and an upper portion hinged to said cartridge case for movement between a closed position to close said openings of said front wall and an opened position which exposes said openings, said lid member being releasable locked in said closed position by a locking means mounted on said bottom section, said locking means comprising a stop member which engages with the engaging member to lock said lid member; and

an opening defined in said bottom section of said cartridge case for allowing passage of a lock releasing member of a recording/reproducing apparatus such that, when said cartridge case is mounted in said recording/reproducing apparatus, said lock releasing member will enter said cartridge case from below and engages with said locking member through sdid opening so as to disengage said stop member from said engaging member, thereby releasing said locking of said lid member, characterized in that said stop member is exerted toward a locking position in a locus of movement of the engaging member of the lid member, that said stop member is positioned in said locking position when the lock releasing member is not engaged with said locking means so as to prevent movement of the engaging member and is moved to an unlocking position out of the locus of the movement of the engaging member when the lock releasing member is engaged with the locking means thereby making the engaging member move freely to allow the lid member to move between the closed position and the opened position, the direction of the movement of the stop member and the direction of the movement of the engaging member of the lid member being in parallel planes.

4,484,249
CONTROL OF STATIC NEUTRALIZATION EMPLOYING CABLES AND WIRES

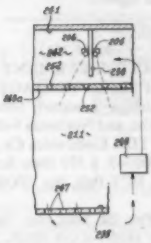
Donald G. Saurenman, Whittier, Calif., assignor to Consan Pacific Incorporated, Whittier, Calif.

Continuation-in-part of Ser. No. 290,423, Aug. 6, 1981, , which is a continuation-in-part of Ser. No. 259,503, May 1, 1981, , which is a continuation-in-part of Ser. No. 241,684, Mar. 9, 1981, , which is a continuation-in-part of Ser. No. 124,242, Feb. 25, 1980,. This application Apr. 19, 1982, Ser. No. 369,925

The portion of the term of this patent subsequent to Jun. 14, 2000, has been disclaimed.

Int. Cl.³ H05F *3/06*

U.S. Cl. 361—216 **39 Claims**



1. The method of reducing static electricity in a work zone, that includes:

(a) providing first electrically conductive cable means with ion dispensing tips spaced therealong, and to which positive voltage is applicable,

(b) providing second electrically conductive cable means with ion dispensing tips spaced therealong, and to which negative voltage is applicable,

(c) locating said first and second cable means at adjusted separations from one another so that static electricity at or proximate the work is effectively reduced to non-objectionable levels when said positive and negative voltages are applied to the cable means,

(d) and providing auxiliary wire means at selected open and unobstructed spacing from said first and second cable means in the general direction toward the work, and substantially equidistantly from each of said first and second cable means, said auxiliary means being at or near ground potential and having exposed electrically conductive surface extent.

4,484,250
STATIC DISSIPATIVE MAT

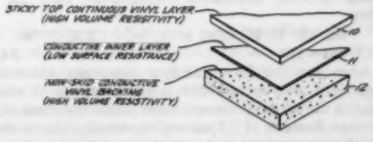
Ray M. Rzepecki, North Scituate, R.I., and Victor H. Weiss, Bridgeport, Conn., assignors to Pervel Industries, Inc., Plainfield, Conn.

Continuation-in-part of Ser. No. 243,776, Mar. 16, 1981, Pat. No. 4,363,071. This application Nov. 5, 1982, Ser. No. 439,531

The portion of the term of this patent subsequent to Dec. 7, 1999, has been disclaimed.

Int. Cl.³ B32B *5/18*

U.S. Cl. 361—220 **10 Claims**


STICKY TOP CONTINUOUS VINYL LAYER (HIGH VOLUME RESISTIVITY)
CONDUCTIVE INNER LAYER (LOW SURFACE RESISTANCE)
NON-SKID CONDUCTIVE VINYL BACKING (HIGH VOLUME RESISTIVITY)
10
11
12

1. In a multi-layer conductive web for discharging a static electric charge impressed thereon, wherein an upper layer of

thermoplastic polymeric material having a volume resistivity of 1×10^7 to 1×10^{12} ohm-cm is in direct physical and electrical connection with a more conductive underlying layer, and wherein conductive means in electrical contact with said underlying layer is provided to connect said underlying layer to ground potential, the improvement wherein said underlying layer is a continuous thin conductive film of thermoplastic polymeric material having a surface resistance in the order of 10^2 ohms per square, and wherein said upper layer significantly includes a tackifying rosin therein to the extent that the upper surface of the upper layer is sufficiently tacky to retain dirt and dust particles and that said rosin will stay thoroughly dispersed in the material of the upper layer, whereby the upper surface of the upper layer is tacky and the surface resistivity of the web as measured on the upper surface of said upper layer is in the order of 10^7 ohms per square.

4,484,251

CURRENT RESTRICTION ELEMENT RESPONSIVE TO APPLIED VOLTAGE

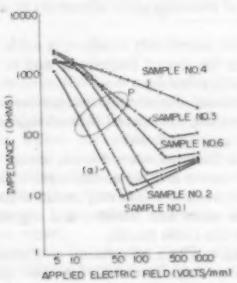
Sho Masujima; Yoshishige Towatari; Shoichi Iwaya; Hitoshi Masumura; Hisao Abe, and Norimasa Sakamoto, all of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

PCT No. PCT/JP82/00047, § 371 Date Sep. 20, 1982, § 102(e) Date Sep. 20, 1982, PCT Pub. No. WO83/03028, PCT Pub. Date Sep. 1, 1983

PCT Filed Feb. 20, 1982, Ser. No. 425,076

Int. Cl.³ H01G *4/10*; H01L *29/12*

U.S. Cl. 361—321 **5 Claims**



1. A current restriction device responsive to an applied electric field comprising a ferro-electric polycrystalline ceramic with a main component of Barium-titanate ($BaTiO_3$), said device having a impedance ratio (Z_2/Z_1) of less than 1/10 wherein Z_2 is the impedance of said device measured with an alternating electric field lower than 500 volts/mm, and Z_1 is the impedance of said device measured with an alternating electric field of 5 volts/mm.

4,484,252

PULSED IN ETCHING OF ALUMINUM FOIL FOR USE IN ELECTROLYTIC CAPACITORS

Rudolphus P. T. Ruijgrok, Eindhoven, and Gerrit Tempelman, Zwolle, both of Netherlands, assignors to U.S. Philips Corporation, N.Y.

Filed Dec. 9, 1981, Ser. No. 328,874

Claims priority, application Netherlands, Dec. 23, 1980, 8006998

Int. Cl.³ H01G *9/00, 9/04, 9/24*; C22C *21/00*

U.S. Cl. 361—433 **3 Claims**

1. Aluminum foil for electrolyte capacitors which has an enlarged effective surface due to the provision of channels opening at the surface, characterized in that the channels have an average diameter of 0.2 μm and repeatedly, after a distance of less than approximately 1 μm, change their direction while the overall length of a channel is on an average more than 5 μm and that the zones on either side of the foil, which are provided with said channels, extend to a substantially equal depth over the entire surface, so that a zone of not less than 15 μm thick in the middle of the foil cross-section remains free of channels,

the foil having a value of d_2 = loss of volume of aluminum per square cm of at least 25 μm and a product of CV of more than 1000 μF Volt after forming.

4,484,253

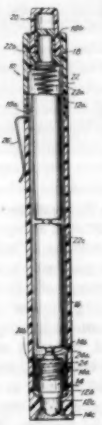
POCKET FLASHLIGHT

Irving J. Roberts, 19 Breeze Hill Rd., East Hampton, N.Y. 11937

Filed Sep. 26, 1983, Ser. No. 535,732

Int. Cl.³ F21L *7/00*

U.S. Cl. 362—206 **9 Claims**



1. A flashlight comprising:

a non-conductive flashlight body adapted to receive at least one flashlight battery having a non-conductive coating and adapted to receive a flashlight bulb;

a protract-retract pushbutton mechanism movable from a fully retracted condition, to a fully depressed condition, to a partially retracted condition, back to its fully retracted condition for selectively energizing said flashlight bulb; and

a spring member located within said flashlight body and including a spring leg movable in a first longitudinal direction generally parallel to the longitudinal axis of said flashlight body to a first position wherein said spring leg

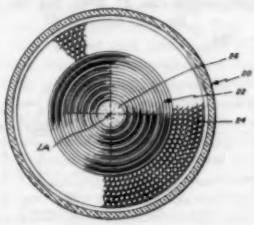
initially completes an electrical circuit from said flashlight battery to said flashlight bulb thereby energizing said bulb when said pushbutton mechanism is actuated and is moved from its fully retracted condition to its fully depressed condition, said spring leg movable in a second longitudinal direction generally parallel to the longitudinal axis of said flashlight body to a second position wherein said spring leg continues to complete an electrical circuit from said flashlight battery to said flashlight bulb thereby energizing said bulb without continuous pressure being applied by a user to said pushbutton mechanism when said pushbutton mechanism is released and is moved from its fully depressed condition to its partially retracted condition, said spring leg movable in said first longitudinal direction and subsequently in said second longitudinal direction to a third position wherein said spring leg moves out of electric contact with said flashlight bulb thereby breaking the electrical circuit from said flashlight battery to said flashlight bulb to deenergize said bulb when said pushbutton mechanism is depressed and is moved from its partially retracted condition to its fully retracted condition.

4,484,254

PAR FLOOD LAMP

Clarence D. Puckett; Arnold E. Westlund, Jr., and William G. Thiry, all of Winchester, Ky., assignors to GTE Products Corporation, Stamford, Conn.

Filed May 21, 1982, Ser. No. 380,496
Int. Cl.³ F21V *7/00*
U.S. Cl. 362—309 **14 Claims**



1. In a flood lamp including a reflector portion, a lens member adjacent said reflector portion, and a light source disposed within said reflector portion and substantially surrounded thereby, the improvement wherein said lens member comprises:

a substantially curved member having a first, internal surface including a series of concentrically disposed fluted rings formed therein and an outer concentric ring portion having a plurality of relatively small semi-spherical protrusions formed therein, each of said fluted rings being disposed at a progressively increasing radius from the axis of said spot lamp passing through said curved member, said outer concentric ring portion contiguous to the outermost of said fluted rings and of a width greater than any one of said fluted rings.

4,484,255

LAMP SWING ARM SUPPORT

Jerome Warshawsky, 1322 Everitt Pl., Hewlett Harbor, N.Y. 11557

Filed Jun. 6, 1983, Ser. No. 501,488
Int. Cl.³ F21V *21/00, 21/08*
U.S. Cl. 362—396 **17 Claims**

10. A lamp; comprising:

(a) a lamp base;

(b) a support post carried by said lamp base;

(c) a swing arm support carried by said support post;

(d) a swing arm carried by said swing arm support for rotative and sliding movement with respect thereto;

(e) a light source carried by said swing arm;

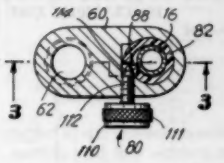
(f) said swing arm support including:

(i) a support housing;

(ii) a first opening extending into said housing along a first predetermined axis, and formed to a size and configuration to receive and be mounted to said support post;

(iii) a second opening extending through said housing along a second predetermined axis, and formed to a size and configuration to receive said swing arm;

(iv) a third opening extending into said housing along a third predetermined axis proximate said second opening



and formed to a size and configuration to receive a clamping actuator;

(v) a clamping ring disposed within said second opening and formed of a size and configuration to slidably receive said swing arm and with a slit to facilitate radial movement of at least a predetermined portion of said clamping ring proximate said slit against said swing arm to clamp same in selected positions; and

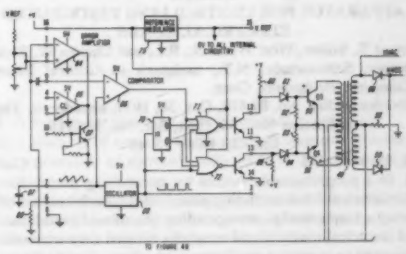
(vi) a clamping actuator movably received within said third opening and having an actuator end movable into engagement with said clamping ring proximate said slit to move said portion of said clamping ring against said swing arm when disposed therewithin to so clamp said swing arm in said selected portions.

4,484,256

CONSTANT CURRENT DENSITY HIGH VOLTAGE POWER SUPPLY

John T. Hartman, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 7, 1982, Ser. No. 366,253
Int. Cl.³ H02M *3/335*
U.S. Cl. 363—26 **3 Claims**



1. A power supply which converts a dc voltage input into a series of relatively lower frequency rectangular current regulated variable duty cycle output pulses comprising:

a transformer comprising a primary and a secondary,

means for periodically inducing relatively higher frequency current pulses into said primary,

means for rectifying and filtering the secondary voltage which is in the form of said relatively higher frequency pulses to produce a dc current,

means responsive to the instantaneous current in said secondary for varying the amplitude of the primary current pulses to regulate the output current, and

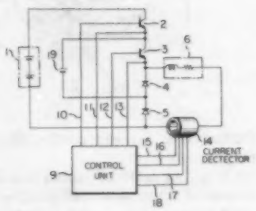
means for periodically disabling said pulses at said primary at a relatively lower frequency to produce a relatively lower frequency rectangular current waveshape at said secondary output.

4,484,257

SERIES-CONNECTED ASSEMBLY OF ELECTRONIC SWITCHES

Hidehiko Sugimoto, Kasugai, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 12, 1982, Ser. No. 397,074
Int. Cl.³ H02M *7/00*
U.S. Cl. 363—124 **6 Claims**



1. In a chopper which is interposed between a D.C. power source and a load and which comprises a plurality of switching elements which are connected between one terminal of said D.C. power source and one terminal of said load and a plurality of series-connected diodes which are connected between another terminal of the D.C. power source and said one terminal of said load; a series-connected assembly of electronic switches which comprise said plurality of switching elements, wherein an auxiliary D.C. voltage source which is independent of an output of said chopper whose voltage is lower than a voltage of said D.C. power source is connected between a node in said series-connected assembly of said electronic switches and a node in said series-connected plurality of diodes, so as to thereby prevent any overvoltage from being applied to one of said switching elements and one of said diodes.

4,484,258

APPARATUS FOR CONTROLLING DISTRIBUTED ELECTRICAL LOADS

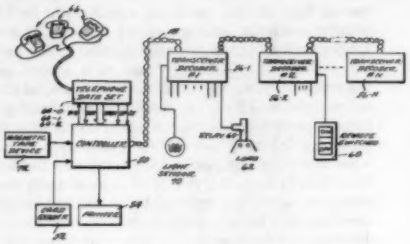
Edward B. Miller, West Warwick, R.I., and Charles W. Eichelberger, Schenectady, N.Y., assignors to General Electric Company, Bridgeport, Conn.

Division of Ser. No. 89,478, Oct. 30, 1979, abandoned. This application Nov. 30, 1981, Ser. No. 326,116
Int. Cl.³ G06F *15/46*
U.S. Cl. 364—141 **4 Claims**

1. In a programmable system for controlling plural distributed electrical loads including plural relays, each connected to control a respectively corresponding one of said plural distributed electrical loads; plural remotely located data transmitters connected to control a predetermined subset of said relay; and a programmable central controller connected to receive data signals from each of said transmitters over a common data communication channel and normally controlling said relays; the improvement comprising:

plural on-off electrical switch input circuits connected to at least one of said transmitters for initiating the transmission of data to said central controller indicative of changes in the state of said switch input circuits,

said at least one transmitter including means causing a delay in the transmission of data to the central controller until the common channel is free from other data transmissions, and



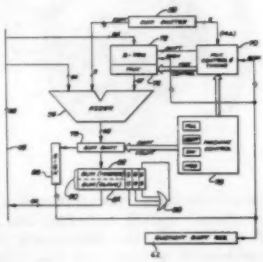
said at least one transmitter also including means for accumulating and storing data to be transmitted indicative of changes in the states of said switch input circuits which occur during said delay.

4,484,259

FRACTION BUS FOR USE IN A NUMERIC DATA PROCESSOR

John Palmer, Hillsboro, Oreg.; Bruce Ravenel, Sunnyvale, Calif., and Rafi Nave, Kiriat Motzkia, Israel, assignors to Intel Corporation, Santa Clara, Calif.

Division of Ser. No. 120,995, Feb. 13, 1980, Pat. No. 4,338,675. This application Jan. 22, 1982, Ser. No. 341,703
Int. Cl.³ G06F *7/44*
U.S. Cl. 364—754 **3 Claims**



1. An improvement in a numeric processor having a fraction bus, said processor for performing arithmetic calculations comprising:

an adder having a first input coupled to said fraction bus;

sum means for storing and shifting numeric quantities, the input of said sum means coupled to an output of said adder, the output of said sum means coupled to said fraction bus;

a multiplexed register having its output coupled to a second input of said adder, the input of said multiplexed register coupled to said fraction bus;

a skip shifter having a first output coupled to a third input of said adder; and

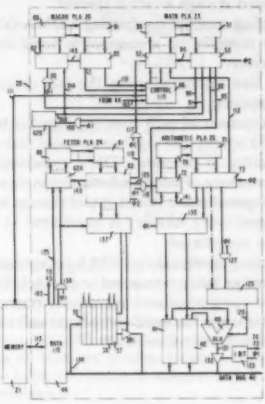
control means coupled to said sum means and multiplexed register to selectively control said sum means and said multiplexed register depending on the arithmetic operation to be performed, a second output of said skip shifter being coupled to said control means to selectively provide control information thereto,

whereby multiplication operations may be selectively performed.

4,484,260
STORED-PROGRAM CONTROL MACHINE

Donald E. Blahut, Holmdel, and Marc L. Harrison, Morganville, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 17, 1981, Ser. No. 331,689
Int. Cl.³ G06F 9/22
U.S. Cl. 364—716 4 Claims



1. A stored-program control machine for providing consecutive sets of control signals for controlling the datapath of a microprocessor, said machine comprising first, second and third encoders, first, second and third input registers each connected to the like-designated encoders and responsive to a first clock signal for applying coded input signals to the like-designated encoder, first, second and third output registers each also connected to said like-designated encoders and responsive to a second clock signal for providing coded outputs from said like-designated encoders, said first output register having a bit field including at least first, second and third portions of M, K, and J bits respectively, said machine including a control source for applying said coded input signals and clock means for applying said first and second clock signals to said first, second and third input registers, and said first, second and third output registers respectively, means for applying the bits of said first portion to said second and third input registers in the presence of said first clock signal, said machine also including gate means for gating said output registers during said second clock signal, said gate means being responsive to said bits of said first portion for applying said bits of said second and third portions to said second and third input registers when said first clock signal next occurs.

4,484,261
DATA PROCESSING SYSTEM HAVING INTERLINKED FAST AND SLOW MEMORY MEANS AND INTERLINKED PROGRAM COUNTERS

George L. Brantingham, Tourrettes sur Loup, France, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 19, 1981, Ser. No. 221,417
Int. Cl.³ G06F 9/22, 9/32
U.S. Cl. 364—200 4 Claims

1. A data processing system comprising:

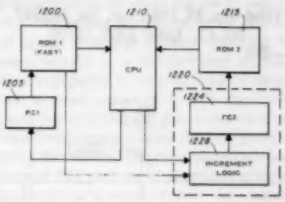
first counter means for generating first address signals,

first memory means coupled to said first counter means, said first memory means selectively producing first data signals in response to said first address signals,

second counter means for generating second address signals,

second memory means coupled to said second counter means, said second memory means selectively producing second data signals in response to said second address signals, said first memory means or said second memory means being alternately enabled,

incrementing means coupled to said first memory means and said second program counter for incrementing a stored count in said second counter means in response to a first particular one of said first data signals from said first memory means while said second memory means is disabled and

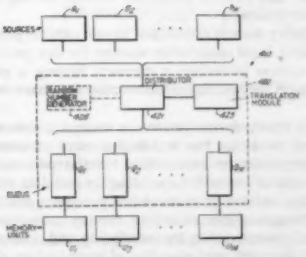


processor means coupled to said first and second data signals for selectively enabling said first memory means in response to a particular one of said second data signals from said second memory means or for selectively enabling said second memory means in response to a second particular one of said first data signals.

4,484,262
SHARED MEMORY COMPUTER METHOD AND APPARATUS

Herbert W. Sullivan, 205 W. End Ave., New York, N.Y. 10023, and Leonard A. Cohn, 527 W. 110th St., New York, N.Y. 10025

Continuation of Ser. No. 002,004, Jan. 9, 1979, abandoned. This application Apr. 15, 1981, Ser. No. 254,583
Int. Cl.³ G06F 13/00
U.S. Cl. 364—200 9 Claims



8. A system for effecting communication comprising:

(a) a plurality of sources which generate memory references;

(b) a plurality of memory units each having locations for storage;

(c) means for translating addresses received with said references into randomly or pseudo-randomly distributed addresses with respect to the memory units; and

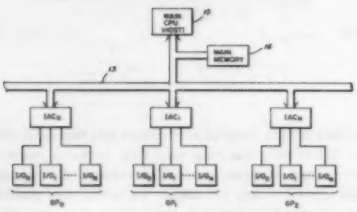
(d) distributor means connected individually to said sources for receiving said memory references, connected with said means (c) for receiving said translated addresses, and connected individually to said memory units for accessing same, said distributor means connecting said sources with said memory units for conveyance of said references and contents of accessed memory units between any such source and any such memory unit correspondingly with said address indicia contained in said memory references and such said translated addresses, whereby the rate of processing references is increased in accordance with

increase in the number of sources with substantial independence of the memory referencing pattern.

4,484,263
COMMUNICATIONS CONTROLLER

David E. Olson, Norfolk; Peter E. Simpson, Natick; Kurt A. Melden, West Newton, and Terence Dowling, Westboro, all of Mass., assignors to Data General Corporation, Westboro, Mass.

Filed Sep. 25, 1981, Ser. No. 305,897
Int. Cl.³ G06F *3/00, 13/00*
U.S. Cl. 364—200 **20 Claims**



1. A communications controller for use in connecting a plurality of input/output devices to a host central processing unit, said host central processing unit having associated therewith a main memory and being connected to a host input/output bus, said communications controller implemented on a single board and comprising:

a. a central processor bus,

b. a host interface section connected to said host input/output bus and said communications controller and serving as a communications link between said central processor bus and said host input/output bus,

c. a control processor section connected to said central processor bus for controlling the operations of the controller, said control processor section having instruction register means,

d. a memory section connected to said central processor bus for providing local read/write storage for the processor, said memory section including a memory having a plurality of locations each for holding an instruction for character processing,

e. a data manipulation processor section connected to said central processor bus and said control processor section and responsive to instructions transferred to said instruction register means for operating on said data either in said memory section or said control processor section, and

f. a communications interface section connected to said central processor bus for interfacing said communications controller with said plurality of input/output devices.

4,484,264
MULTIPROCESSOR SYSTEM

Paul Friedli, Zürich, and Thomas Hinderling, Ebikon, both of Switzerland, assignors to Inventio AG, Hergiswil, Switzerland

Filed Oct. 19, 1981, Ser. No. 312,659
Claims priority, application Switzerland, Oct. 20, 1980, 7798/80
Int. Cl.³ G06F *15/16*
U.S. Cl. 364—200 **7 Claims**

1. A multi-microcomputer system comprising:

a plurality of microcomputers;

a common bus bar;

said plurality of microcomputers being connected to said common bus bar which transmits a synchronization signal generated by one of said microcomputers between the individual microcomputers in order to synchronize said microcomputers for a subsequent comparison operation;

each said microcomputer having stored therein data and computing results from said data stored in said microcomputer in terms of a preselected parameter;

each said microcomputer comprising a microprocessor, a read-write memory, a coupling member and a bus interconnecting said microprocessor, said read-write memory and said coupling member;

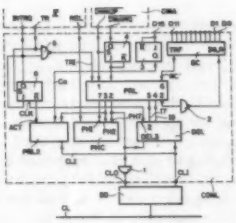
each said result computed by a related one of said microcomputers being stored in the related read-write memory at a related storage location thereof;

each said coupling member comprising a DMA-component, an interface component, a connection logic component and a bus driver;

a comparison line interconnecting the bus drivers of the coupling members;

said DMA-component of each coupling member being connected to said connection logic component thereof and to said bus in order to generate a DMA requirement signal after the appearance of said synchronization signal whereupon the computed result stored in said storage location of the related read-write memory is transferred to said connection logic component;

said interface component and said DMA-component of each coupling member being connected in parallel to said connection logic component and operatively connecting via said bus said connection logic component and said microprocessor of such microcomputer;



said connection logic component of each coupling member being connected to said bus and being connected to said comparison line via said bus driver thereof;

said connection logic component of each coupling member comprising related comparison signal generating means;

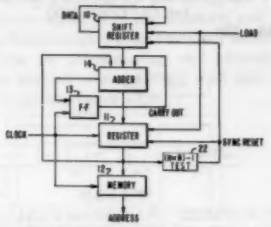
each said comparison signal generating means receiving a related one of said computed results and generating, after said microcomputers have been synchronized and after the related computed result has been transferred to said connection logic components and after the comparison line has been activated and all the comparison signal generating means have been started simultaneously, a related comparison signal of a duration which corresponds to the magnitude of said related computed result;

said comparison signal generating means producing comparison signals of different durations and that one of said connection logic components associated with the comparison signal generating means generating the comparison signal of longest duration deactivating said comparison line and producing an interruption requirement signal which indicates an optimum value of the result computed by the related microcomputer with respect to said preselected parameter and the remaining connection logic components which generate a comparison signal of shorter duration producing an interruption requirement signal indicating a non-optimum value of the results computed by the related microcomputers.

4,484,265
CORNER TURN MEMORY ADDRESS GENERATOR

Martin W. Czekalski, Crownsville, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 6, 1981, Ser. No. 319,028
Int. Cl.[3] G06F 7/00; G01S 13/00
U.S. Cl. 364—200 5 Claims



1. Circuitry for generating an address sequence, each member of said address sequence specifying a storage location in a digital memory for storing data, said data being arranged as a data matrix having first and second dimensions designated as (M) columns and (N) rows, each element of said data matrix occupying at least one storage location in said memory with the product (M) (N) being an integral power of two, comprising in combination:

(a) adder means having at least first and second data input terminals and data output terminals;

(b) first storage means comprising a shift register having data input and data output terminals for storing a first digital number, said first digital number comprising a member of said address sequence to produce at said data output terminals said first digital number said storage means further comprising means operable to shift said shift register one bit each time the output signal of said adder means is equal to $((M \times N)-1)$;

(c) second storage means for storing a second number to be added to said first digital number to generate a second member of said address sequence;

(d) third storage means having data input and data output terminals for storing the current member of said address sequence to produce at said data output terminals of said third storage means said current member of said address sequence;

(e) circuit means for

(1) coupling said first digital number to said first data input terminals of said adder means,

(2) coupling means for coupling said second number to said second data input terminals of said adder,

(3) coupling means for coupling said data output terminals of said adder means to said input data terminals of said first storage means, and

(f) clock signal means for sequentially storing the output of said adder means in said third storage means, thereby producing sequential members of said address sequence at the output terminal of said third storage means.

4,484,266
EXTERNALLY SPECIFIED INDEX PERIPHERAL SIMULATION SYSTEM

Donald L. Becker, Fredericksburg, and John C. Edwards, Dahlgren, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

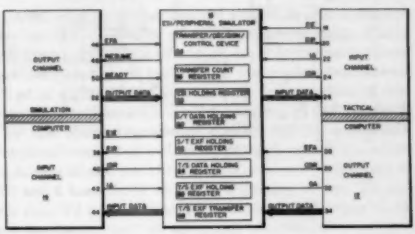
Filed Dec. 11, 1981, Ser. No. 329,848
Int. Cl.[3] G06F 15/16
U.S. Cl. 364—200 7 Claims

1. An improved Externally Specified Index (ESI) peripheral simulation system including a tactical computer and a simulation computer, said ESI peripheral simulation system being configured to emulate real peripheral devices of said tactical computer during the testing of a tactical program, the tactical program being the real time operational program for the tactical computer, wherein the improvement comprises:

An Externally Specified Index (ESI) peripheral simulator operatively connected to input and output ports of said tactical computer and to input and output ports of said simulation computer for converting predetermined interface signals of said simulation computer to be compatible with predetermined interface signals of said tactical computer, for controlling and transferring information in the form of actual data and external function (EXF) codes (command words) in a bidirectional manner from said simulation computer to said tactical computer (S/T) or from said tactical computer to said simulation computer (T/S), and for interleaving the actual data and the command words while simulating the real peripheral devices and testing the tactical program of said tactical computer; wherein said ESI peripheral simulator comprises;

a transfer/decision/control device for interface control between said tactical computer and said simulation computer;

a transfer count register operatively connected to said transfer/decision/control device for counting the number of data words of actual data to be transferred from said simulation computer to said tactical computer, and for sending a control signal to said transfer/decision/control device when the count reaches zero, said transfer/decision/control device sensing the control signal and operating to terminate the actual data transfer in response thereto;



an ESI holding register operatively connected to said transfer/decision/control device for temporary storage of an index to be used by said tactical computer during the transfer of actual data to said simulation computer, the index being used to calculate the memory location within the tactical computer where the actual data is to be stored;

a S/T data holding register operatively connected to said transfer/decision/control device for the temporary storage of actual data transferred from said simulation computer to said tactical computer;

a S/T EXF holding register operatively connected to said transfer/decision/control device for the temporary storage of external function (EXF) codes (command words) transferred from said simulation computer to said tactical computer;

a T/S data holding register operatively connected to said transfer/decision/control device for the temporary storage of actual data transferred from said tactical computer to said simulation computer;

a T/S EXF holding register operatively connected to said transfer/decision/control device for first level temporary storage of external function (EXF) codes (command words) to be transferred from said tactical computer to said simulation computer; and

a T/S EXF transfer register operatively connected to said T/S EXF holding register for second level temporary storage of external function (EXF) codes (command

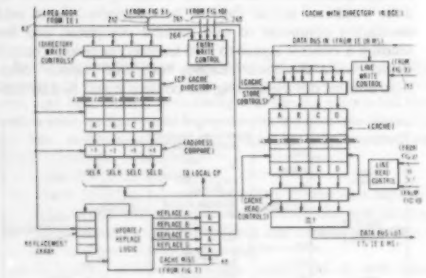
words) to be transferred from said tactical computer to said simulation computer, said T/S EXF holding register and said T/S EXF transfer register coacting such that a subsequent external function (EXF) code is held in said T/S EXF holding register until a previous external function (EXF) code has been transferred out of said T/S EXF transfer register, and such that the subsequent external function (EXF) code held in said T/S EXF holding register is immediately transferred into said T/S EXF Transfer register.

4,484,267

CACHE SHARING CONTROL IN A MULTIPROCESSOR

Robert P. Fletcher, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1981, Ser. No. 335,971
Int. Cl.³ G06F *15/16, 9/00, 13/00*
U.S. Cl. 364—200 **8 Claims**



1. Cache controls associated with central processors (CPs) in a multiprocessor (MP), in which the CPs share a main storage (MS), each CP having a cache and a CP directory with a plurality of line entries, each directory line entry including a change (CH) flag, a valid (V) flag and a MS address field for a corresponding line of data in the associated cache, the MP cache controls comprising:

each directory line entry also including a sharing (SH) flag settable to a sharing or non-sharing state,

CP storage control means having line fetch means for fetching a line from MS when a store request or fetch request misses in the cache when a requested MS address field is not found in the associated CP cache directory,

store-in-cache means with the CP storage control means for storing only into a selected line in the associated cache addressed by a CP store request when a selected SH flag is in a non-sharing state in a selected line entry in the cache directory,

store-through means with the CP storage control means for enabling the CP to store into a selected line in both the cache and MS only if the SH flag is set to sharing state for the selected cache line entry,

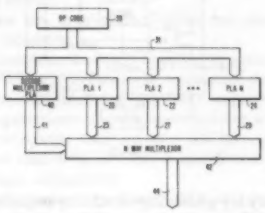
cross-interrogation (XI) means for broadcasting the MS address for a fetch request having a cache miss or for a store request either having a cache miss or having a cache hit with the selected SH flag being in a sharing state, the XI means signalling if any conflicting copy of the line is found in any other CP cache in the MP.

4,484,268

APPARATUS AND METHOD FOR DECODING AN OPERATION CODE USING A PLURALITY OF MULTIPLEXED PROGRAMMABLE LOGIC ARRAYS

Nandor G. Thoma, 4686 NW. 2nd Ct., Boca Raton, Fla. 33431; Victor S. Moore, R.R. #1, Box 603, Pompano Beach, Fla. 33064, and Wayne R. Kraft, 10720 NW. 43 Ct., Coral Springs, Fla. 33065

Filed Feb. 22, 1982, Ser. No. 350,661
Int. Cl.³ G06F *9/00*
U.S. Cl. 364—200 **4 Claims**



1. Apparatus for decoding an operation code, the apparatus including means for providing operation code signals, a control code bus, and a programmable logic array responsive to said operation code signals for generating control code signals therefrom, the improvement comprising:

a plurality of programmable logic array means each responsive to said operation code signals and concurrently operable for generating respective decoded output signals; and

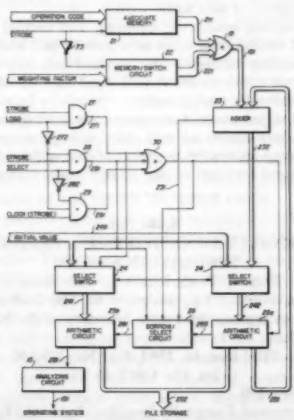
decode multiplexer means further responsive to said operation code signals for selecting one of said plurality of programmable logic array means and for gating the decoded output signals therefrom to said control code bus as control code signals.

4,484,269

APPARATUS FOR PROVIDING MEASUREMENT OF CENTRAL PROCESSING UNIT ACTIVITY

John B. Crain, Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed May 5, 1982, Ser. No. 374,842
Int. Cl.³ G06F *1/00*
U.S. Cl. 364—200 **17 Claims**



1. Apparatus for measuring the usage of a central processing

unit resulting from execution of an instruction, said apparatus comprising:

register means for storing a predetermined numerical value signal;

memory means for storing a plurality of weighting factor signals correlated to a portion of each of a plurality of instruction signals;

means responsive to signals representing said portion of an instruction being executed for extracting the correlated weighting factor signal from said memory; and

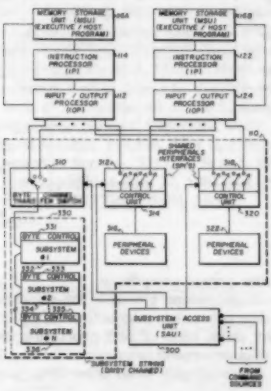
decrementing means coupled to said memory means and said register means for decrementing said numerical value signal by an amount commensurate with said extracted correlated weighting factor signal.

4,484,270

CENTRALIZED HARDWARE CONTROL OF MULTISYSTEM ACCESS TO SHARED AND NON-SHARED SUBSYSTEMS

John M. Quernemoen, New Brighton; Timothy R. Voltz, St. Paul; Richard P. Campbell, and Joseph G. Kriscunas, both of Blaine, all of Minn., assignors to Sperry Corporation, New York, N.Y.

Filed Jul. 7, 1982, Ser. No. 395,936
Int. Cl.³ G06F *15/16*
U.S. Cl. 364—200 **34 Claims**



1. A central controlling unit, for use with a plurality of data processing systems, none, some, or all of which are capable of being partitioned into a further plurality of separate entities, having the characteristics of a complete data processing system and a plurality of subsystem interface connections, said central controlling unit comprising:

enabling/disabling connection means connected to said plurality of subsystem interface connections for dynamically enabling/disabling, from a central location, said plurality of subsystem interface connections to selected entities and/or systems; and

means coupled to said enabling/disabling connection means for maintaining these enabled/disabled interconnections for as long as desired from undesired appropriation; and

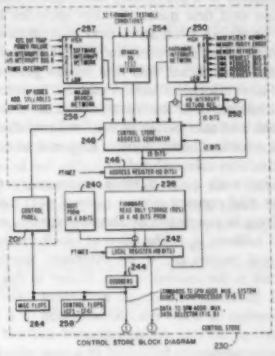
storage means commonly connected to said enabling/disabling connection means and to said means for maintaining these interconnections, said storage means having residual information stored therein to cause various subsystem interconnections in response to corresponding system command signals.

4,484,271

MICROPROGRAMMED SYSTEM HAVING HARDWARE INTERRUPT APPARATUS

Ming T. Miu, Chelmsford; John J. Bradley, Framingham, and Jian-Kuo Shen, Watertown, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Continuation of Ser. No. 008,005, Jan. 31, 1979, abandoned. This application Jun. 28, 1982, Ser. No. 392,500
Int. Cl.³ G06T *9/20*
U.S. Cl. 364—200 **11 Claims**



1. In a microprogrammed control system having a control store for storing a plurality of microprograms, each of said microprograms comprised of one or more microinstructions, each microinstruction of said one or more microinstructions comprised of a plurality of bits, each microinstruction of said one or more microinstructions being executed in a single clock cycle by said microprogrammed control system, said single clock cycle comprised of a plurality of clock subcycles, a first clock subcycle of said plurality of clock subcycles beginning at time T0 and a later clock subcycle beginning at time T2 and wherein time T2 is after time T0 in each of said single clock cycles, a hardware interrupt apparatus comprising:

A. first means, for generating from each current microinstruction from the control store a normal next microinstruction address after time T0 but before time T2 during the execution of the current microinstruction for addressing a next microinstruction in the presently executing microprogram or, from the last microinstruction from an interrupt service routine, a next microinstruction in a previously interrupted microprogram, said normal next address being available at an output of said first means;

B. second means, an output of said second means coupled to address inputs of said control store, said second means storing a next microinstruction address at a time T2 during the execution of said current microinstruction for addressing said next microinstruction to be read from said control store, said next microinstruction address being available at said output of said second means;

C. third means, for generating a hardware interrupt microprogrammed service routine starting address that corresponds to a highest priority, interrupt requesting but not yet granted service, said starting address being available at a first output of said third means before time T2 during the execution of said current microinstruction; and

D. fourth means, a first input of said fourth means coupled to said output of said first means, a second input of said fourth means coupled to said first output of said third means, and an output of said fourth means coupled to an input of said second means, said fourth means generating said next microinstruction address after time T0 but before time T2 during the execution of said current microinstruction by selecting between said normal next microinstruc-

tion address and said hardware interrupt microprogrammed service routine starting address; and

E. fifth means having an input coupled to said output of said first means for storing said normal next microinstruction address as a resume microinstruction address when said hardware interrupt microprogrammed service routine starting address from said third means is selected by said fourth means, said fifth means having an output coupled to a first input of said first means to provide the stored resume microinstruction address as said next microinstruction address in a previously interrupted microprogram;

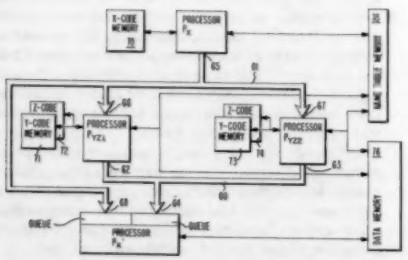
wherein said first means further includes a second input for receiving a tentative next microinstruction address, a third input for receiving a next microinstruction address select signal, said first means generating said normal next microinstruction address by selecting between said resume microinstruction address stored in said fifth means and said tentative next microinstruction address, said selection being done in response to said next microinstruction select signal;

wherein, with each current microinstruction addresses from said control store a normal next microinstruction address is generated by the first means, and the normal next address is, in the current clock cycle, stored in the second means or, if an interrupt starting address is stored in the second means, stored in the eighth means, said hardware interrupt apparatus providing for the execution of a last microinstruction of a first hardware interrupt service routine as said current microinstruction immediately followed in a next clock cycle by the execution of a first microinstruction of a second hardware interrupt microprogrammed service routine as said next microinstruction without said microprogrammed control system returning to said previously interrupted microprogram to execute one or more of said one or more microinstructions comprising said previously interrupted microprogram if a second hardware interrupt requests service prior to time T2 of said single clock cycle of said last microinstruction of said first hardware interrupt service routine.

4,484,272
DIGITAL COMPUTER FOR EXECUTING MULTIPLE INSTRUCTION SETS IN A SIMULTANEOUS-INTERLEAVED FASHION

Howard H. Green, San Diego, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jul. 14, 1982, Ser. No. 398,195
Int. Cl.³ G06F *9/06*
U.S. Cl. 364—200 **10 Claims**



1. A digital computer for executing a first instruction set in an interleaved fashion with second and third instruction sets both of which are executed at the same time, comprising:

means for fetching any instruction of said first set and for determining if the fetched instruction references two encoded addresses having the same predetermined code; said encoded addresses having address bits which locate respective items in a memory, and having code bits which identify the nature of said items; said predetermined code indicating the respective items are instructions in said second and third sets that compute addresses of two variables;

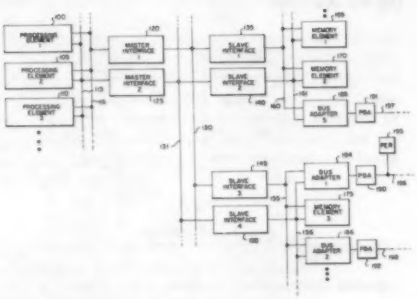
means for temporarily suspending operations on said fetched instruction of said first set if its referenced encoded addresses have said same predetermined code, and simultaneously executing said instructions of said second and third sets as located by said address bits in said encoded addresses to compute the addresses of said two variables; and

means for continuing operations on said fetched instruction of said first set after said instructions in said second and third sets have been simultaneously executed by performing a mathematical operation specified by said fetched instruction on said two variables.

4,484,273
MODULAR COMPUTER SYSTEM

Jack J. Stiffler, Concord; Richard A. Karp, Bedford; James M. Nolan, Jr.; Michael J. Budwey, both of Holliston, and David A. Wallace, Chelmsford, all of Mass., assignors to Sequoia Systems, Inc., Marlborough, Mass.

Filed Sep. 3, 1982, Ser. No. 414,961
Int. Cl.³ G06F *15/16*
U.S. Cl. 364—200 **33 Claims**



1. A computer system comprising

a plurality of processing elements for simultaneously performing data processing calculations for a plurality of data processing tasks, each of said processing elements performing data processing calculations for one data processing task independently from other data processing elements;

a common memory area having a plurality of storage locations, each of said plurality of storage locations being accessable by all of said processing elements; and

means responsive to request signals generated by said processing elements for temporarily selecting one of said processing elements generating a request signal, said temporarily selected processing element assigning portions of said common memory area to said data processing tasks.

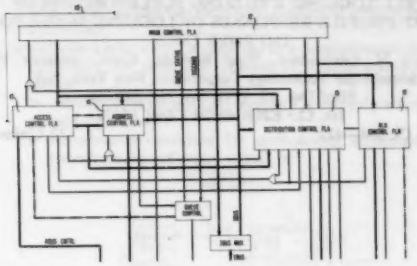
4,484,274
COMPUTER SYSTEM WITH IMPROVED PROCESS SWITCH ROUTINE

Alan D. Berenbaum, Summit, N.J.; Anand Jagannathan, Hopkinton, Mass.; John J. Molinelli, Fair Haven, and Steven P. Pekarich, Eatonton, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 7, 1982, Ser. No. 415,732
Int. Cl.³ G06F *9/00*
U.S. Cl. 364—200 **5 Claims**

1. A microprocessor arrangement including a semiconductor integrated circuit chip, said chip comprising a first register

array adapted to store the hardware context of a current process and a second register array for storing the instantaneous data being processed by said microprocessor during the execution of said current process, said first register array including a



first register containing a first bit having first or second values and means responsive to said first or second values for controllably storing the contents of said first and second register arrays or the contents of only said first array, respectively, during a process switch operation.

4,484,275

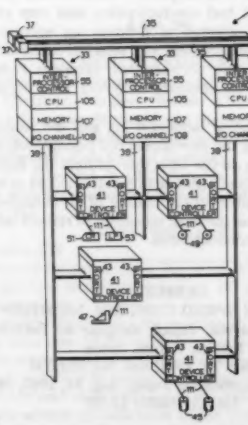
MULTIPROCESSOR SYSTEM

James A. Katzman, San Jose; Joel F. Bartlett, Palo Alto; Richard M. Bixler, Sunnyvale; William H. Davidow, Atherton; John A. Despotakis, Pleasanton; Peter J. Graziano; Michael D. Green, both of Los Altos; David A. Greig; Steven J. Hayashi, both of Cupertino; David R. Mackie, Ben Lomond; Dennis L. McEvoy, Scotts Valley; James G. Treybig, and Steven W. Wierenga, both of Sunnyvale, all of Calif., assignors to Tandem Computers Incorporated, Cupertino, Calif.

Continuation of Ser. No. 147,310, May 6, 1980, abandoned, which is a division of Ser. No. 721,043, Sep. 7, 1976, Pat. No. 4,228,496. This application Jun. 17, 1983, Ser. No. 504,596

Int. Cl.[3] **G06F** *3/04, 13/00*

U.S. Cl. 364—200 **8 Claims**



1. A method of selectively connecting one of a plurality of device controllers with an input/output channel of a processor module in accordance with a predetermined priority scheme in a system of the kind in which a plurality of device controllers are connected to an input/output channel comprising a multiple bit data bus and can each assert a reconnect or an interrupt request signal to the input/output channel simultaneously with the assertion of reconnect or interrupt request signals from the other device controllers, said method comprising,

determining which device controllers are asserting requests to the input/output channel,

selecting a particular device controller by the input/output channel in accordance with the predetermined priority scheme,

connecting the device controllers to the input/output channel in a star poll connection so that each device controller is independently connected to the input/output channel and any number of device controllers can fail or be powered off without affecting the polling of the other device controllers and wherein the star poll connection comprises a single interrupt line connected to the device controllers for transmitting an interrupt request signal from a device controller to the input/output channel and the data bus is a multiline bi-directional data bus for transmitting individual addresses on ones of the data lines associated with a related individual ones of the device controllers for addressing the device controllers so that the individual lines of the data bus transmit both data and addresses,

performing data transfer between the input/output channel and the selected device controller, and

disconnecting the selected device controller at the end of the data transfer.

4,484,276

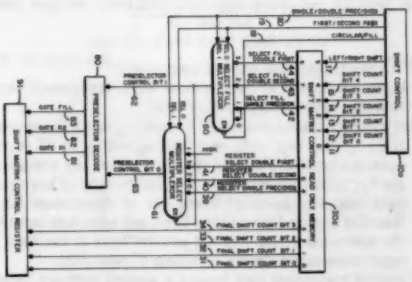
SHIFT MATRIX PRESELECTOR CONTROL CIRCUIT

John R. Porter, Eagan, and Melvin A. Wagner, Burnsville, both of Minn., assignors to Sperry Corporation, New York, N.Y.

Continuation of Ser. No. 235,864, Feb. 19, 1981, abandoned. This application Jun. 28, 1983, Ser. No. 509,096

Int. Cl.[3] **G06F** *9/24, 9/26, 9/00*

U.S. Cl. 364—200 **9 Claims**



1. In a digital system that translates a first plurality of high-level shift control signals, which typically arise from instruction translation, which first plurality of signals is used in portions designated first portion, second portion, third portion, and fourth portion, into a second plurality of low-level shift process control signals, which control the selective gating of data to a shift matrix and the shifting of data within said shift matrix, an improvement in the method of translation comprising:

addressing a memory, using the first plurality-first portion signals, to cause said memory to output a third plurality of shift control signals having a first portion and a second portion; then

inputting the third plurality-first portion signals, from said memory, to a plurality of multiplexors; then

using the first plurality-second portion signals to control signal selection in said plurality of multiplexors; then

outputting, from said plurality of multiplexors, a fourth plurality of shift control signals, selected from the inputted signals; then

decoding in a decoder circuit said fourth plurality of shift control signals into a fifth plurality of shift control signals,

wherein said fifth plurality of shift control signals plus said second portion of said third plurality of shift control signals are, collectively, identical to said second plurality of shift process control signals.

4,484,277

ELECTRONIC CASH REGISTER HAVING SELECTIVE READOUT

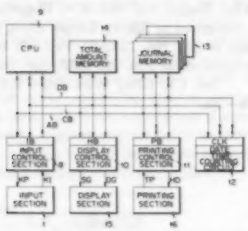
Yoshinori Uesugi, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 278,417, Jun. 29, 1981,. This application Sep. 26, 1983, Ser. No. 536,626

Claims priority, application Japan, Jul. 4, 1980, 55-90726; Jul. 4, 1980, 55-90727; Jul. 8, 1980, 55-92215; Jul. 8, 1980, 55-92216; Jul. 16, 1980, 55-96173; Aug. 1, 1980, 55-105949; Aug. 1, 1980, 55-105950

Int. Cl.[3] **G06F** *15/20*

U.S. Cl. 364—405 **4 Claims**



1. An electronic cash register comprising:

a keyboard having at least amount keys, department keys, function keys and transaction keys;

first memory means connected to said keyboard, for sequentially storing key code data corresponding to all of the operated keyboard keys in the sequence of key operation, the key code data including data on the type of key operated, said key operated being one of department keys, function keys and transaction keys, and sales data input by the operation of each of the amount keys at the time of input designation during inputting of sales data;

a central processing unit having a second memory means and being connected to said keyboard and to said first memory means, said central processing unit including:

means for storing in said second memory means designated read out data input by the operation of any one of at least department keys, function keys and transaction keys on said keyboard; and

means for judging whether all the key code data sequentially read out from said first memory means, at the time of read out of said key code data from said first memory means, coincides with the data shown by said designated read out data which is stored in said second memory means; and printing means connected to said central processing unit for sequentially printing input sales data on a receipt at the time said sales data is input by operation of said keyboard; and at the time of read out of said key code data from said first memory means, for sequentially printing only the data which is judged by said judging means of said central processing unit to coincide with said designated read out data which is stored in said second memory means.

4,484,278

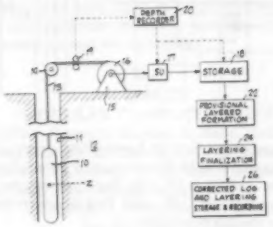
WELL LOGGING: UTILIZING SUPERPOSITION OF STEP-PROFILE RESPONSES OF LOGGING TOOLS TO IMPROVE LOGS

Henry N. Edmundson, West Reading, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Dec. 22, 1981, Ser. No. 333,396

Int. Cl.[3] **E21B** *49/00*; **G06F** *15/20*

U.S. Cl. 364—422 **12 Claims**



1. A well logging process comprising the following machine-implemented steps:

deriving an original induction log and an original resistivity log produced, respectively, by passing an induction tool through a borehole and by passing a resistivity tool through the same borehole or subsurface formation;

finding provisional boundary depth levels from said original resistivity log and finding provisional bed conductivities on the basis of said provisional bed boundary depth levels and said original induction log, said provisional bed boundaries and bed conductivities defining a provisional layered formation traversed by the borehole;

producing, from said provisional boundary depth levels and bed conductivities, a provisional reconstructed induction log by linearly superposing respective known step profile responses of the induction tool to conductivity step profiles consistent with respective ones of said provisional boundaries and bed conductivities, said step profile responses being selected to produce an accurate reconstructed log measurement at a selected intermediate part of a bed squeezed between two shoulder beds having conductivities significantly different from that of the squeezed bed;

matching the original induction log and the reconstructed log and refining the provisional bed conductivities and/or bed boundaries on the basis thereof until the match based on the most recent refinement meets selected criteria; and

producing a tangible representation of an improved induction log based on the most recent set of refined bed boundaries and bed conductivities.

4,484,279

VEHICLE SPEED CONTROL METHOD

Masahito Muto, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Sep. 10, 1981, Ser. No. 301,036

Claims priority, application Japan, Sep. 18, 1980, 55/128590

Int. Cl.[3] **G05D** *13/58*

U.S. Cl. 364—426 **5 Claims**

1. A method for automatically controlling a vehicle speed, the method including selectively setting a reference signal representative of a desired vehicle speed, detecting an actual vehicle speed, generating a speed signal representative of the detected actual vehicle speed, comparing the speed signal to the reference signal, and adjusting the actual vehicle speed to reduce the difference between the compared signals, wherein

the step of selectively setting a reference signal representative of a desired vehicle speed comprises:

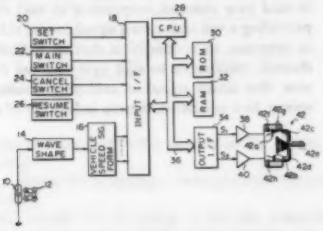
generating an instruction signal whenever it is desired to selectively set a reference signal representative of a desired vehicle speed;

determining, in response to each instruction signal, whether or not a previously set automatic control of vehicle speed is in effect;

selectively performing, in response to a determination that a previously set automatic control of vehicle speed is in effect,

an increase operation for increasing a previously set reference signal, or

a maintenance operation for maintaining unchanged a previously set reference signal, or



a retardation operation for reducing a previously set reference signal, the operation to be performed being determined by selecting a duration of the instruction signal; or

performing, in response to a determination that a previously set automatic control of vehicle speed is not in effect, a setting operation for equalizing a reference signal to a speed signal representative of a detected actual vehicle speed, only the setting operation being performed regardless of the duration of the instruction signal, wherein performing the setting operation comprises repeatedly equalizing the reference signal to the speed signal representative of the detected actual vehicle speed at predetermined intervals during actuation of the instruction switch.

4,484,280

SYSTEM FOR CONTROLLING THE PROPULSION ON MOTOR VEHICLES

Franz Brugger, Winnenden; Manfred Burckhardt, Waiblingen; Horst Grossner, Berglen; Walter Kostelezky, Ostfildern; Siegfried Schlosser, Stuttgart, and Richard Zimmer, Fellbach, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 9, 1982, Ser. No. 396,876

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1981, 3127302

Int. Cl.[3] **B60T** *8/10*

U.S. Cl. 364—426 **25 Claims**

1. A system for controlling the propulsion on motor vehicles, to prevent undesired spinning of the driven vehicle wheels, comprising

a first control loop means for reacting to the state of motion of at least one driven vehicle wheel to activate a wheel brake when a wheel is tending to spin,

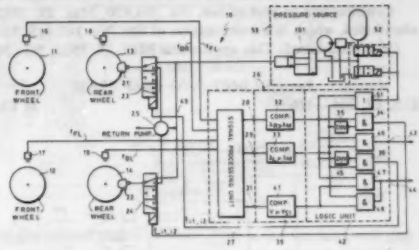
a second control loop means for causing the output torque of the drive unit to be reduced in the event of a tendency of driven wheels on both sides of the vehicle to spin,

a measuring means for sensing the speed of the vehicle to generate an output signal which is characteristic of said speed,

a first comparator means triggered by at least one presettable threshold value v_{s1} of the speed of the vehicle for generating the output signal which effects the reduction of the drive torque as soon as this threshold value is exceeded and a signal is present, which indicates that at least one of a wheel-brake is being activated and one of the driven wheels is tending to spin,

wherein a second higher speed threshold-value v_{s2} is preset, and further comprising

a v_{s2} comparator means for generating an output signal when the threshold value v_{s2} is being exceeded and as soon as



only a single brake-control signal is present to indicate that one of the driven wheels is tending to spin,

means responsive to the v_{s2} comparator means output-signal for causing the drive torque to be reduced,

means for triggering the first comparator means by the first threshold value v_{s1} and

means for activating the first comparator means in response to a sensing that the vehicle is following a curved path.

4,484,281

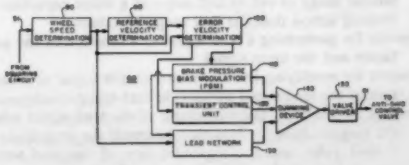
APPARATUS FOR GENERATING A LEAD SIGNAL IN AN ANTISKID SYSTEM

Thomas Skarvada, Granada Hills, Calif., assignor to Crane Co., Chicago, Ill.

Continuation-in-part of Ser. No. 405,951, Aug. 6, 1982, abandoned, which is a continuation of Ser. No. 146,617, May 5, 1980, Pat. No. 4,344,137. This application Aug. 17, 1982, Ser. No. 408,864

Int. Cl.[3] **B60T** *8/00*; **G06F** *15/20*

U.S. Cl. 364—426 **8 Claims**



7. In an antiskid system including a wheel, a brake coupled to the wheel, means for generating a wheel signal indicative of wheel rotation, means responsive to the wheel signal for generating a brake control signal as a time integral function of the difference between the angular velocity of the wheel and a threshold velocity, and means responsive to the brake control signal for reducing braking action of the brake, the improvement comprising:

means for generating a first lead signal as a function of a first time derivative of the angular velocity of the wheel;

means for generating a second lead signal as a function of a second time derivative of the angular velocity of the wheel;

means for selecting the one of the first and second lead signals indicative of a greater reduction in braking action;

means for generating a composite lead signal as a function of the selected lead signal to prevent the non-selected lead signal from interfering with the selected lead signal; and

means for modifying the brake control signal as a function of the composite lead signal to provide lead compensation.

4,484,282

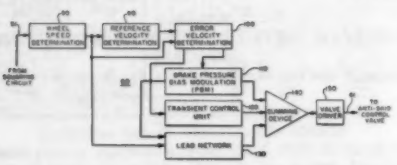
APPARATUS FOR GENERATING A LEAD SIGNAL IN AN ANTISKID SYSTEM

Robert D. Cook, Valencia, and Thomas Skarvada, Granada Hills, both of Calif., assignors to Crane Co., Chicago, Ill.

Continuation-in-part of Ser. No. 359,820, Mar. 19, 1982, abandoned, which is a continuation of Ser. No. 146,615, May 5, 1980, abandoned. This application Mar. 14, 1983, Ser. No. 475,040

Int. Cl.[3] **B60T** *8/00*; **G06F** *15/20*

U.S. Cl. 364—426 **24 Claims**



1. In an antiskid system including a wheel, a brake coupled to the wheel, means for generating a wheel signal indicative of a selected time derivative of the rotational position of the wheel, modulator means responsive to the wheel signal for generating a modulator output signal as a time integral function of the wheel signal, and means responsive to the modulator output signal for reducing braking action of the brake, the improvement comprising:

means for generating an input signal indicative of a predetermined time derivative of the angular velocity of the wheel, said predetermined time derivative of angular velocity corresponding to a higher order time derivative of the rotational position of the wheel than the selected time derivative of the rotational position of the wheel;

means, responsive to the modulator output signal, for generating a gain factor as a function of the modulator output signal such that the gain factor is set to a first gain value when the modulator output signal is within a first range of values, and to a second gain value, higher than the first gain value, when the modulator output signal is within a second range of values indicative of a lesser reduction of braking action than the first range of values;

means for generating a lead signal as a function of the gain factor and the input signal;

means for modifying the modulator output signal as a function of the lead signal to provide lead compensation; and

means for reducing the magnitude of the lead signal when the magnitude of the lead signal exceeds the magnitude of a limit value and the algebraic sign of the lead signal corresponds to the algebraic sign of the limit value;

said modulator having a gain independent of said gain factor.

4,484,283

AIRCRAFT ROLL-YAW FAULT PROTOCOLS

David J. Verzella, Guilford; William C. Fischer, Monroe; Don L. Adams, Fairfield; Stuart C. Wright, Milford, and Byron Graham, Jr., Easton, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 30, 1981, Ser. No. 249,272

Int. Cl.[3] **G06F** *15/50*; **G06G** *7/70*

U.S. Cl. 364—434 **1 Claim**

1. An aircraft automatic flight control system, comprising:

a roll channel including a roll actuator for positioning roll-axis-controlling aerodynamic surfaces of the aircraft;

a yaw channel including a yaw actuator for positioning yaw-axis-controlling aerodynamic surfaces of the aircraft;

roll disable means operable in either of two states for enabling operation of said roll actuator in response to roll command signals applied thereto when in a first one of said states and for disabling operation of said roll actuator when set in the other of said states in response to a roll shut down signal provided thereto;

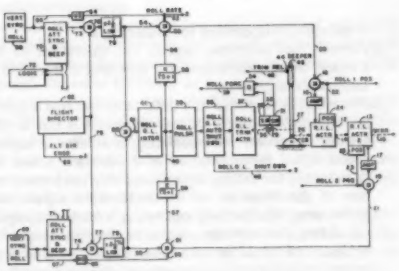
yaw disable means operable in either of two states for enabling operation of said yaw actuator in response to yaw command signals applied thereto when in a first one of said states and for disabling operation of said yaw actuator when set in the other of said states in response to a yaw shut down signal provided thereto;

means for providing a roll reset signal;

means for providing a yaw reset signal;

a trim shut down indicator; and

signal processing means for providing roll command signals to said roll channel, for providing yaw command signals to said yaw channel, responsive to said roll channel for providing a roll shut down signal to said roll disable means in response to a condition therein indicative of a fault thereof, responsive to said yaw channel for providing a yaw shut down signal to said yaw disable means in response to a condition therein indicative of a fault thereof,

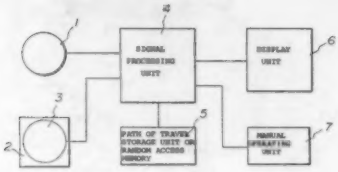


for providing said yaw shut down signal in response to said roll shut down signal, for operating said trim shut down indicator in response to the presence of said roll shut down signal concurrently with the absence of said roll reset signal, for operating said trim shut down indicator in response to the presence of said yaw shut down signal concurrently with the absence of said yaw reset signal, for providing a third shut down signal indicative of a third fault and for operating said trim shut down indicator in response to the presence of said third shut down signal concurrently with the absence of said roll reset signal, whereby operation of said trim shut down indicator being interrupted by the absence of said roll reset signal concurrently with the presence of said yaw reset signal is indicative of fault in said yaw channel, and operation of said trim shut down indicator being interrupted by the presence of said roll reset signal concurrently with the absence of said yaw reset signal is indicative of said third fault, and operation of said trim shut down indicator being uninterrupted by the presence of either said roll reset signal or said yaw reset signal being indicative of fault in said roll channel.

4,484,284
APPARATUS FOR VISUALLY INDICATING A CURRENT TRAVEL ROUTE OF A VEHICLE

Katsutoshi Tagami; Tsuneo Takahashi, both of Saitama; Shinichiro Yasui, Tokyo; Masao Sugimura, Saitama, and Fumitaka Takahashi, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 2, 1981, Ser. No. 298,629
Claims priority, application Japan, Sep. 4, 1980, 55-122891
Int. Cl.³ G06F *15/50*
U.S. Cl. 364—449 **5 Claims**



1. A visual travel route indicating apparatus for use in a vehicle, comprising:

distance sensor means for detecting a current travel distance of said vehicle;

gas rate sensor means for detecting a current azimuthal deviation generated by said vehicle during turning operation;

said gas rate sensor means being isolatedly enclosed in an atmosphere within thermostatic chamber means;

said thermostatic chamber means comprising a casing having said gas rate sensor means disposed therein and provided with first heating means, and an outer housing having said casing disposed therein and provided with second heating means;

signal processing means, operatively cooperating with said distance and gas rate sensor means, for arithmetically obtaining a current point plotted on two-dimensional coordinates per a given unit distance of travel of said vehicle in accordance with the output signal from each of said distance and gas rate sensor means; and

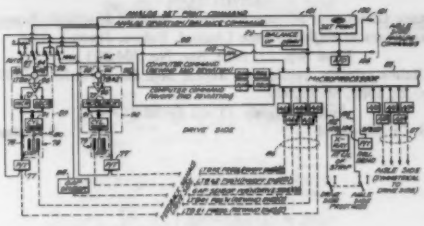
display means, operatively cooperating with said signal processing means, for visually indicating a current path of travel of said vehicle in accordance with location data on the two-dimensional coordinates, changing from time to time as the vehicle progresses in its travel, and obtained by said signal processing means.

4,484,285
LOAD-TRANSFER MECHANISM

William I. deVersterre, Warren, and Donald A. Worden, Pompton Plains, both of N.J., assignors to Marotta Scientific Controls, Inc., Boonton, N.J.

Continuation of Ser. No. 548,619, Nov. 4, 1983, abandoned, which is a division of Ser. No. 347,687, Feb. 11, 1982, abandoned. This application Apr. 6, 1984, Ser. No. 597,263
Int. Cl.³ G06F *15/46*; B21B *37/08, 31/32*
U.S. Cl. 364—472 **40 Claims**

33. A rolling mill comprising two spaced parallel upstanding side housings, two vertically spaced horizontal working rolls establishing a pass from an entry to an exit for through-travel of material to be rolled between said side housings, a back-up roll vertically behind each of said working rolls, a back-up roll chock at each end of each of the back-up rolls and providing rotary support for the respective ends of the back-up rolls, chock-support means including a vertical chock guide in each of said side housings for accomodating at each side housing vertical displacement of at least one of the back-up rolls, means at each side housing for urging the associated chocks toward each other to force the back-up rolls against the working rolls to load the working rolls, and four load-transfer mechanisms there being one associated with and reacting between associated chocks on both the entry side and the exit side of each of said side housings, each load-transfer mechanism comprising hydraulic means providing spreading-force application to the associated back-up roll chocks, an independently operative hydraulic control system including a control valve connected for exclusive service of each load-transfer mechanism, first and

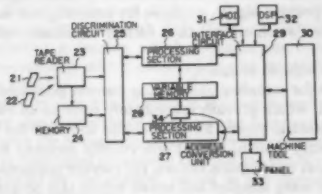


second gap-sensor means positioned to sense working-roll gap at the respective ends of said pass, and means including a microprocessor with separate connections to said first and second gap-sensor means and with control connections to all said load-transfer mechanisms for automatically controlling the relative chock-spreading actions of said respective load-transfer mechanisms.

4,484,286
NUMERICAL CONTROL SYSTEM

Tsuyoshi Nagamine; Hideaki Kawamura, and Mitsuto Miyata, all of Hachioji, Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Apr. 29, 1981, Ser. No. 258,780
Claims priority, application Japan, May 28, 1980, 55-70997
Int. Cl.³ G05B *19/403*; G06F *15/46*
U.S. Cl. 364—474 **14 Claims**



1. A numerical control method for executing, in a numerical control device, numerical control processing on the basis of a command program and for actuating a machine in accordance with the results of said processing steps to machine a workpiece in the manner specified by the instructions in the command program, comprising the following steps:

(a) preparing a plurality of instructions representative of first system variables, each of which is distinguished by a first variable number, the values of which represent a variety of operational conditions of the machine or of a numerical control device;

(b) computing addresses of storage areas for storing the values of said first system variables by converting said first variable numbers into addresses;

(c) storing said first system variables in said storage areas in dependence upon the converted addresses;

(d) storing, in advance, a user macro in a memory, said user macro having at least an identification and an instruction that employs said system variables;

(e) programming a user macro call instruction into the command program;

(f) reading out a prescribed user macro from the memory by means of said user macro call instruction; and

(g) executing numerical control processing for actuating the machine in dependence upon said user macro.

4,484,287

SYSTEM FOR RESTORING NUMERICALLY CONTROLLED MACHINE TOOL TO FORMER CONDITION

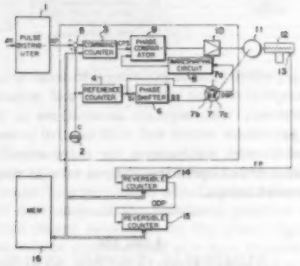
Gotaro Gamo, and Mitsuo Kinoshita, both of Hachioji, Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Sep. 23, 1981, Ser. No. 304,903

Claims priority, application Japan, Sep. 30, 1980, 55-136607; Sep. 30, 1980, 55-136608

Int. Cl.³ G06F *15/46*; G05B *19/18*

U.S. Cl. 364—474 **8 Claims**



1. In a numerical control system for a numerically controlled machine tool in which a position sensor senses the current position of a movable member or of a drive motor of the machine tool and delivers a current position signal in accordance with said current position, the movable member being positioned on the bases of a commanded position signal and aid current position signal, a system for restoring the numerically controlled machine tool to a former condition, which comprises:

a non-volatile memory;

means for sampling and storing current positional information, which prevails immediately prior to an interruption in electric power to the machine tool and the numerical control system, in said non-volatile memory before said power interruption occurs, the current positional information being sampled and stored before said power interruption occurs;

means for reading the current positional information out of said non-volatile memory when electric power is reintroduced; and

means for returning the movable member of the machine tool to the position which said movable member occupied immediately prior to said power interruption, on the basis of said current positional information read out of said non-volatile memory and said current position signal generated by said position sensor.

4,484,288

CONVEYOR CONTROL

Don H. Riemenschneider, Cincinnati, Ohio, assignor to Cissell Manufacturing Company, Louisville, Ky.

Filed Nov. 27, 1981, Ser. No. 325,218

Int. Cl.³ G06G *15/24*

U.S. Cl. 364—478 **12 Claims**

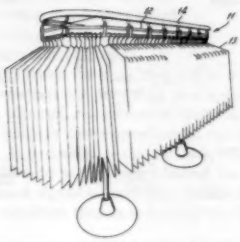
1. A control for positioning a conveyor in a conveyor arrangement that includes an endless conveyor which traverses a closed path, there being a series of particular locations along the conveyor, a conveyor drive responsive to an activating signal for driving the conveyor along the closed path, and means for producing an actual conveyor position signal indicative of a proportion of a complete traversal of the path by the conveyor, comprising:

means for storing an indication of the length of the conveyor;

means for receiving and storing an externally applied indication of a desired conveyor position in terms of one of said particular locations along the conveyor;

means, coupled to the actual conveyor position signal producing means and to the conveyor length storing means and responsive to the desired conveyor position indication of the receiving and storing means, for producing a desired conveyor position signal indicative of a proportion of a complete traversal of the path by the conveyor; and

means for providing an activating signal to the conveyor drive to drive the conveyor until the actual conveyor position signal has a predetermined relationship to the desired conveyor position signal.



4,484,289

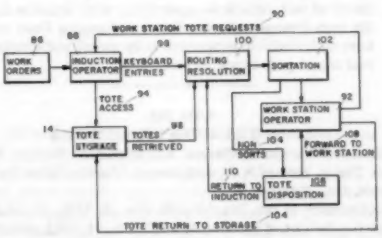
TOTE DIRECTOR

Robert F. Hemond, Grand Rapids, Mich., assignor to Rapistan Division of Lear Siegler, Inc., Grand Rapids, Mich.

Filed Jan. 29, 1982, Ser. No. 344,174

Int. Cl.³ G06F *15/20*

U.S. Cl. 364—478 **32 Claims**



1. A method of acquiring real time information regarding the status of work materials in process within a work area, said work area including a plurality of work stations at which the work materials are processed by human operators, said method comprising the steps of:

transporting a work material directly from a central storage zone to a work station in response to a request received at the storage zone from the operator at the work station;

storing data in real time for each work material transported including a station number unique to the work station to which the work material is transported, said data further including a target time number unique to a target residence time for said material; and

displaying said real time data for facilitating future work material flow through said work area.

4,484,290

LINE DISTURBANCE MONITOR

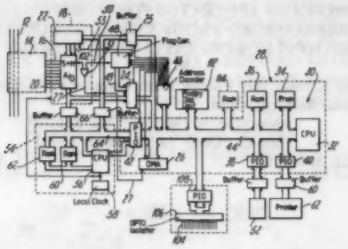
Jeffrey L. Bagnall, Eccles, and Tom Roscoe, Oldham, both of England, assignors to Ferranti plc, Cheshire, England

Filed Mar. 18, 1982, Ser. No. 359,313

Claims priority, application United Kingdom, Mar. 28, 1981, 8109809

Int. Cl.³ G01R 19/00

U.S. Cl. 364—483 17 Claims



1. A disturbance monitor for monitoring at least one operating parameter of a power line comprising:

input means connectable to the power line for providing at least one analog signal representative of the time varying value of the parameter;

A/D conversion means connected to said input means for sampling the analog signal at predetermined intervals and producing at each sample time a digital sample word representing the value of the sampled parameter at the sample time;

disturbance sensing means connected to receive digital sample words from said A/D conversion means, said disturbance sensing means storing reference parameter values for the power line and to detect deviations from the reference parameter values by the received digital sample words and derive in response to such deviations data indicative of a disturbance on the line;

storage means including at least one storage zone having a plurality of storage locations of which a predetermined number are assigned to pre-disturbance operation, and the remainder are assigned to post-disturbance operation, said predetermined number of storage locations being arranged for sequential addressing in a loop to store sequentially generated sample words with the most recently generated sample word replacing the oldest stored sample word, and said remainder of said storage locations arranged to store sample words sequentially addressed;

control means including a main digital processing unit connected to receive sample words from said A/D conversion means and programmed to cause the sample words to be written into the pre-disturbance storage locations as the sample words are generated, and said control means being responsive to said disturbance sensing means to cause subsequently generated sample words to be written into the post-disturbance locations;

data flag generating means responsive to at least one predetermined operating condition and inserting data flags representing the predetermined condition into said storage means between successively generated sample words; and

said control means, after said post-disturbance locations have been filled, reading the sample words and the data flags from the storage means in chronological order of storage and preparing said sample words for display of the corresponding signals in analog form, the data represented by the flags being chronologically related to said corresponding signals.

4,484,291

COMPARISON CIRCUIT FOR DETERMINING THE STATISTICAL EQUALITY OF TWO ANALOG SIGNALS

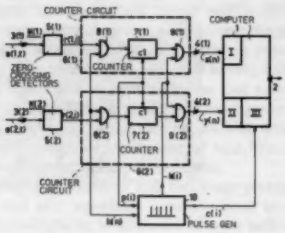
Theodoor A. J. Schlösser, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 21, 1981, Ser. No. 313,393

Claims priority, application Netherlands, Nov. 21, 1980, 8006353

Int. Cl.³ G06J 1/00; H03J 7/18

U.S. Cl. 364—484 4 Claims



1. A signal comparison circuit for comparing a first and a second analog signal with each other, characterized by:

(a) a first and a second signal processing channel each having:

i—an input port to which one or other of said analog signals are applied,

ii—an output port;

iii—a zero-crossing detector the input of which is coupled to the input of the signal processing channel;

iv—a counter circuit the input of which is connected to the output of the zero-crossing detector and the output of which is coupled to the output of the signal processing channel and which is arranged to count all the zero-crossings occurring within a measuring time interval T(n) wherein n=1, 2, 3, . . . N of a number of N measuring time intervals T(1), T(2), . . . T(N) and for producing a number which indicates the number of zero-crossings which occurred in this measuring time interval T(n);

(b) a computer which is coupled to the two output ports of the two signal processing channels and is arranged to:

i—receive the N numbers produced by the counter circuit in the first signal processing channel and the N numbers produced by the counter circuit in the second signal processing channel;

ii—determine by means of these numbers the value of a statistical quantity;

iii—produce a first and a second signal, respectively, when the value of this statistical quantity is higher than, respectively lower than or equal to a threshold value.

4,484,292

HIGH SPEED MACHINE FOR THE PHYSICAL DESIGN OF VERY LARGE SCALE INTEGRATED CIRCUITS

Se J. Hong, Yorktown Heights; Ravindra K. Nair, Peekskill, both of N.Y., and Eugene Shapiro, Stamford, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 12, 1981, Ser. No. 272,880

Int. Cl.³ G06F 15/20

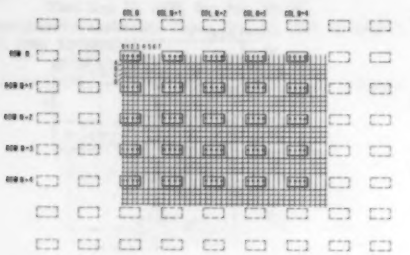
U.S. Cl. 364—491 6 Claims

1. In a system for determining wire routings between terminals on a master-slice chip, wherein a plurality of devices are formed on said chip, with a plurality of mutually orthogonal horizontal and vertical wiring channels formed on said chip, with a plurality of wiring tracks being formed in each channel, with said devices and channels forming an array of cells, with said terminals being placed along the wiring tracks in at least

one of the horizontal and vertical wiring channels, the combination comprising:

an array of processing elements, equal in number to at least a submultiple of the number of cells formed on said chip, said processing elements including at least four input/output ports for communicating with at least four neighbors in said array of processing elements, including a control input/output port;

a control processor for selectively providing commands to



said control input/output port of each said processing element in said array to concurrently determine the wire routing from a plurality of source terminals to a plurality of sink terminals on said chip; and

means in each of said processing elements for responding to said commands from said control processor and communications from said four neighbors to first determine the best channel routings from said source terminals to said sink terminals, and then to determine the best wiring track in each of said best channel routings.

4,484,293

DIMENSIONAL MEASUREMENT SYSTEM SERVED BY A PLURALITY OF OPERATING ARMS AND CONTROLLED BY A COMPUTER SYSTEM

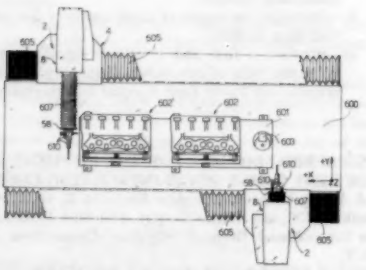
Giorgio Minucciani, Moncalieri, and Maurizio Ercole, Turin, both of Italy, assignors to D.E.A. Digital Electronic Automation S.p.A., Moncalieri, Italy

Filed Dec. 11, 1981, Ser. No. 329,754

Claims priority, application Italy, May 15, 1981, 67649 A/81

Int. Cl.³ G05B *19/42*

U.S. Cl. 364—513 **5 Claims**



1. A dimensional measurement system for measuring a workpiece at a workpiece station comprising:

at least two operating arms,

means for mounting said arms on opposite sides of the workstation;

first means carried at an end of one operating arm for detecting dimensional measurements along three orthogonal coordinates of the workpiece and second means carried at an end of the other arm for detecting dimensional measurements along the opposite three orthogonal coordinates of the workpiece,

means for displacing each said arm in three orthogonal directions with respect to said workpiece station so that said detecting means on said arms simultaneously measure the workpiece in opposite orthogonal directions, and

computer means for controlling and monitoring displacement of each said arm and each said detecting means.

4,484,294

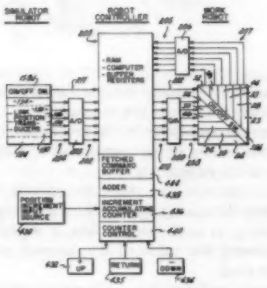
METHOD AND APPARATUS FOR MODIFICATION OF A PRERECORDED PROGRAMMED SEQUENCE OF MOTIONS DURING EXECUTION THEREOF BY A ROBOT

Jeffrey S. Noss, Bay Village, Ohio, assignor to Nordson Corporation, Amherst, Ohio

Filed Mar. 3, 1982, Ser. No. 354,315

Int. Cl.³ G06F *15/46*; G05B *19/42*

U.S. Cl. 364—513 **14 Claims**



1. A controller for driving an articulated robot link under closed loop servo control in response to a stored sequence of recorded link position commands, the robot link having associated therewith a signal-responsive link actuator and a link position feedback transducer which provides a feedback signal correlated to link position, said controller having real time link position command editing capability, comprising:

means to store a sequence of recorded robot link position commands,

means to sequentially retrieve robot link position commands from said storage means,

means responsive to a retrieved link position command and the link position feedback signal input from the link position feedback transducer for calculating a link position error signal for input to the link actuator to drive the link to a command position,

accumulating means, including a manually-activated switch means, for accumulating periodic positional increments for the duration said switch means is activated, said accumulating means providing successive outputs correlated to the successive cumulative positional increment therein,

means responsive to said successive cumulative positional increment outputs for modifying successively retrieved link position commands in accordance with the successive cumulative positional increments in said accumulating means,

means for effectively substituting said modified link commands in said storage means for their respectively associated, previously retrieved link position commands, and

means for inputting on an interleaved basis both retrieved link position commands which were not modified and modified link position commands into said calculating means in the sequence in which said unmodified link position commands and modified link position commands were retrieved and modified, respectively, said inputting means being operative substantially concurrently with

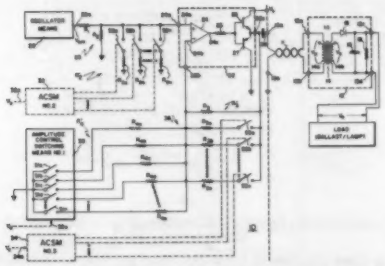
said retrieving means and modifying means to facilitate driving said robot with said sequence of interleaved modified and unmodified link position commands while said manually-activated switch means is activated to effectively manually modify link position commands of a recorded sequence on a real time basis while said controller is processing said recorded sequence for execution by said robot.

4,484,295

CONTROL CIRCUIT AND METHOD FOR VARYING THE OUTPUT OF A WAVEFORM GENERATOR TO GRADUALLY OR RAPIDLY VARY A CONTROL SIGNAL FROM AN INITIAL VALUE TO A DESIRED VALUE

James F. Bedard; Charles W. Eichelberger, both of Schenectady, and Salvator F. Nati, Jr., Syracuse, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 26, 1981, Ser. No. 267,330
Int. Cl.³ G05F *1/12, 1/48;* G05B *24/02*
U.S. Cl. 364—607 **10 Claims**



1. A method for controlling the output amplitude of a waveform generator having a plurality of individually selectable discrete output amplitudes and a desired frequency; in which data corresponding respectively to said plurality of output amplitudes, a predetermined integer N, a predetermined integer K, and a predetermined initial value of an integer M are stored in a computer memory; comprising the steps of:

(a) transferring from said computer memory to a control circuit for controlling said waveform generator data corresponding to a first one of the plurality of output amplitudes;

(b) operating the generator at said first output amplitude;

(c) transferring from said computer memory to said control circuit for controlling said waveform generator data corresponding to a second one of the plurality of output amplitudes;

(d) retrieving data corresponding to said integer K and N from said computer memory;

(e) calculating a number N′ of time intervals by dividing N by K, each containing N cycles of said generator waveform, where N′ is another integer equal to (N/K);

(f) retrieving from said computer memory data corresponding to said initial value of said integer M;

(g) operating the generator at said second output amplitude for M′=KxM waveform cycles and at said first output amplitude for the remaining (N-M′) cycles;

(h) increasing the value of M to the next successive value in a range of integer values from 1 to N, at the completion of each of the N′ time intervals;

(i) repeating steps (g) and (h) for each of N′ time intervals; and

(j) operating the generator continuously at said second output amplitude after completion of all of said N′ time intervals.

9. A circuit for providing an output signal of amplitude controlled responsive to the data contained in at least one externally-provided digital control signal, comprising:

oscillator means for providing a periodic output waveform having a selected frequency and a substantially constant amplitude;

waveform control circuit means for receiving said periodic output waveform and providing a periodic waveform having a variable amplitude responsive to the magnitude of a first voltage applied to a control input of said waveform control circuit means;

a circuit output terminal; and

means for recovering a D.C. level responsive to the amplitude of the waveform control circuit means periodic waveform, and for providing said D.C. level to said circuit output terminal as said circuit output signal;

said waveform control circuit means comprising:

first and second source of circuit operating potential;

a plurality of resistance elements each having a first terminal thereof connected in parallel to the first terminals of all other resistance elements, and each having a second terminal; each said resistance element second terminal being individually connectable to one of said first and second sources of circuit operating potential;

means, connected between said resistance element first terminals and said waveform control circuit means control input, for supplying to said control input said first voltage at an amplitude established by the particular combination of said resistance element second terminals connected respectively to said first and second operating potentials; and

means for controlling the connection of said resistance element second terminals to one of said first and second sources of circuit operating potentials to smoothly change the recovered D.C. level from a first D.C. level value, responsive to the data of a first digital control signal, to a second D.C. level value, responsive to the data of a second digital control signal, in an integer number N′ of time intervals each containing an integer number N of cycles of said oscillator waveform frequency, by providing (a) all of said N waveform cycles during a first of said time intervals at a first amplitude to yield said first D.C. level value; (b) then providing a sequentially increasing number of waveform cycles at the beginning of sequential ones of said time intervals at a second amplitude which will yield said second D.C. level value, and the remainder of the cycles during each of said time intervals at said first amplitude, until said second amplitude is provided for all N cycles of a time interval; and (c) providing thereafter said waveform only at said second amplitude.

4,484,296

PHASE PROGRAMMABLE SIGNAL GENERATOR MEANS

Jan E. Treise, W. Melbourne, and Orville K. Nyhus, Melbourne, both of Fla., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 19, 1982, Ser. No. 399,676
Int. Cl.³ H03B *19/00*
U.S. Cl. 364—607 **7 Claims**

1. Phase programmable signal generator means comprising, in combination:

first means for supplying a clock signal;

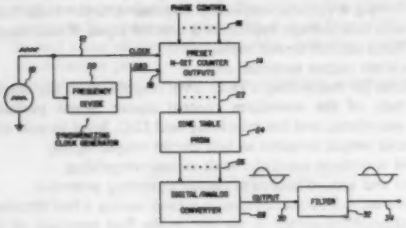
signal supply second means for supplying a phase control signal;

third means for supplying a synchronizing signal;

counter means including phase control signal input means, synchronizing signal input means, clock signal input means and digital output signal means for supplying digital output signals which change when a clock signal is applied to said clock signal input means and which change in relative phase in accordance with signals received at said phase control signal input means;

means for receiving signals from said first, second, and third means at appropriate inputs of said counter means, the

synchronizing signal acting to resynchronize the counter output signal after phase shift changes; and



conversion means, connected to said digital output signal means of said counter means, for changing received digital output signals to an analog representation of a trigonometric function of the received digital number signal.

4,484,297

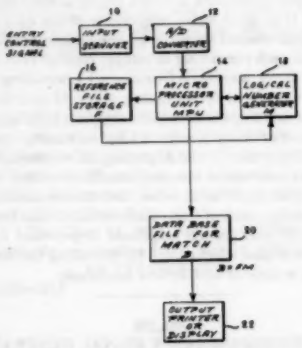
VARIABLE DATA BASE GENERATOR APPARATUS

James J. Maier, Clinton; Jeffrey P. Woodard, Rome; John V. Ferrante, Rome, and Michael A. Heffron, Rome, all of N.Y., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 6, 1981, Ser. No. 308,972

Int. Cl.³ G06F *7/58*

U.S. Cl. 364—717 **5 Claims**



1. A variable data base generator apparatus comprising in combination:

an input scanner means to receive an entry control signal, said input scanner means providing an analog signal in response to said entry control signal as an output,

an A/D converter means receiving and converting said analog signal to a digital signal,

a microprocessor means to receive said digital signal, said microprocessor means grouping said digital signal into a number of bytes,

a reference file means connected to said microprocessor means to receive said digital signal therefrom, said digital signal being stored within said reference file means,

a logical number generator means connected to both said microprocessor means and said reference file means, said microprocesser means initiates a command signal to said reference file means which transfers said digital signal to said logical number generator means, said microprocessor means and said logical number generator means interact to modify said digital signal to generate a simulated file, and,

a data base file means connected to said microprocessor means to receive both said digital signal and said simulated file therefrom, said data base file means storing said digital signal and said simulated file.

4,484,298

METHOD AND DEVICE FOR GENERATION OF QUADRATIC CURVE SIGNAL

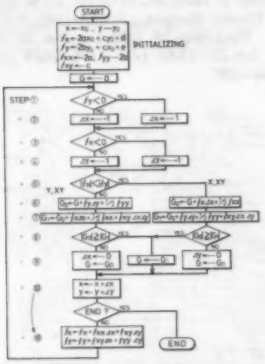
Tadanari Inoue; Takao Asaka, and Yuji Yamaguchi, all of Tokyo, Japan, assignors to Yokogawa Hokushin Electric Corporation, Tokyo, Japan

Filed Apr. 5, 1982, Ser. No. 365,938

Claims priority, application Japan, Apr. 30, 1981, 56-65795; May 25, 1981, 56-78899

Int. Cl.³ G06F *15/31*

U.S. Cl. 364—720 **2 Claims**



1. A system for generating a quadratic signal, comprising at least two registers to store a coefficient and variable;

an arithmetic circuit to operate for addition and subtraction of signals from said registers and to store the operation result in said registers;

a sign register to input data relevant to a sign of said operation result from said arithmetic circuit;

a logic circuit to give an operation indicating signal to said arithmetic circuit through a combination of a signal from said sign register with a microprogram indicating a given operation sequence;

two updown counters given data of X coordinate position and Y coordinate position to indicate a start point at first and updating the data in sequence according to information from said arithmetic circuit;

a circuit means to give data to said two updown counters from said arithmetic circuit,

logic for deciding signs of linear micro-coefficients fx,fy in the directions of x and y on the quadratic curve f(x,y)=0 or at points (x,y) close to said curve,

logic for comparing fx,fy for dimensions,

logic for calculating new f(x, y) for two points G_o and G_1, having determined a point G to select next beforehand,

logic for comparing absolute values of the two points G_o, G_1 of the new f(x,y),

logic for selecting from points G_o, and G_1, the point giving the smaller absolute value as the next point;

and end point detection circuit means to detect points selected in sequence as an end point upon satisfying the following conditions, thereby producing said quadratic curve signal expressed by f(x,y)=0, from said two updown counters,

$$(X=XE)\quad (SFY=SFYE) \text{ at } |FX| \leqq |FY|$$

$$(Y=YE)\quad (SFX=SFXE) \text{ at } |FX| > |FY|$$

wherein micro-coefficients for x,y at points (x,y) selected in sequence are FX,FY; the signs are SFX, SFY; and micro-coefficients for x, y at end points (XE,YE) set

beforehand are FXE, FYE, and the signs are SFXE, SFYE.

4,484,299

DIGITAL FILTER ARRANGEMENT HAVING MEMORY MEANS WITH ADDRESSABLE WORDS STORED THEREIN

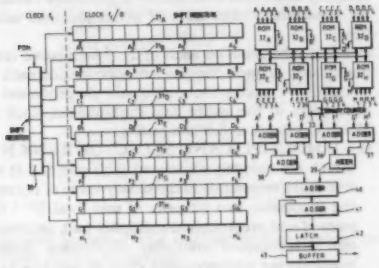
Edward H. Lambourn, Enfield, and Gideon A. Senensieb, Barnet, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 9, 1982, Ser. No. 356,584

Claims priority, application United Kingdom, Mar. 12, 1981, 8107765

Int. Cl.³ G06F *15/31*

U.S. Cl. 364—724 **23 Claims**



1. A digital filter arrangement for a serial pulse stream having a given clock rate comprising:

a plurality of shift registers operating in parallel, each of said shift registers having pulses read out in parallel from selected positions thereof, predetermined combinations of said pulses read out of said plurality of shift registers providing a plurality of address words;

first means coupled to said plurality of shift registers to distribute individual pulses of groups of pulses of said pulse stream into different ones of said plurality of shift registers sequentially and cyclically to produce said plurality of address words;

addressable memory means coupled to said plurality of shift registers, said memory means having a plurality of storage locations each having stored therein a digital word, said memory means providing in a non-volatile manner said digital word of each of said plurality of storage locations in response to associated ones of said plurality of address words;

second means coupled to said memory means to sum said digital words read out of said plurality of storage locations; and

logic means coupled to said second means for providing a serial output for said filter arrangement from said sum of said digital words read out of said plurality of storage locations.

4,484,300

DATA PROCESSOR HAVING UNITS CARRY AND TENS CARRY APPARATUS SUPPORTING A DECIMAL MULTIPLY OPERATION

Virendra S. Negi, Pepperell, and Steven A. Tague, Billerica, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 24, 1980, Ser. No. 219,810

Int. Cl.³ G06F *7/52*

U.S. Cl. 364—755 **5 Claims**

1. Apparatus for generating a carry during the execution of a decimal multiply instruction wherein a decimal digit multiplier is multiplied by a decimal digit multiplicand comprising:

first means responsive to a multiplier decimal digit and a first and subsequent multiplicand decimal digits for generating a first and subsequent units product decimal digits during a first and subsequent odd cycles of operation and a first tens product decimal digit during a second and subsequent even cycles of operation;

second means for storing partial product decimal digits;

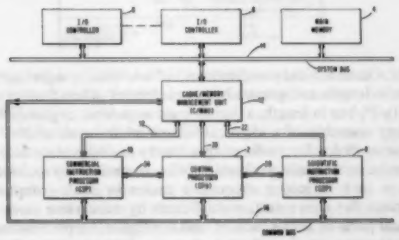
adder means coupled to said first and second means and responsive during said first cycle of operation to said first units product decimal digit and a first of said partial product decimal digits for generating a first units sum decimal digit for replacing said first partial product decimal digit in said second means and a carry signal in a first state indicative of a units carry or said carry signal in a second state indicative of no units carry,

and responsive during said second cycle of operation to said first tens product decimal digit and a second of said partial product decimal digits for generating a first tens sum decimal digit for replacing said second partial product decimal digit in said second means and said carry signal in said first state indicative of a tens carry or said carry signal in said second state indicative of no tens carry;

units carry means coupled to said adder means for storing said carry signal in said first state during said first cycle of operation;

tens carry means coupled to said adder means for storing said carry signal in said first state during said second cycle of operation;

multiplexer means coupled to said units and said tens carry



means for receiving said carry signal in said first state during a third cycle of operation from said units carry means, and receiving said carry signal in said second state during a fourth cycle of operation;

said first means responsive to said multiplier decimal digits and a second multiplicand decimal digit for generating a second units product decimal digit during said third cycle of operation and a second tens product decimal digit during said fourth cycle of operation;

said adder means being further coupled to said multiplexer means for receiving, during said third cycle of operation, said carry signal in said first state, said second units product decimal digit, and said second partial product decimal digit for generating a second units sum decimal digit for replacing said second partial product decimal digit in said second means,

and receiving, during said fourth cycle of operation, said carry signal in said second state, said second tens product decimal digit and a third partial product decimal digit for generating a second tens sum decimal digit for replacing said third partial product decimal digit in said second means;

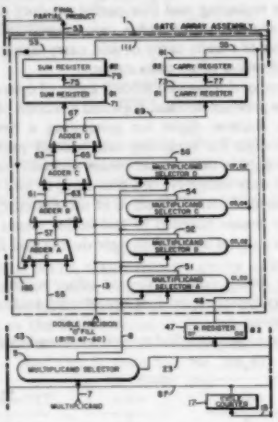
wherein said first multiplicand decimal digit is the least significant decimal digit and said second multiplicand decimal digit is representative of the next higher and subsequent higher order decimal digits, and said multiplier decimal digit is representative of the multiplier decimal digits with the exception of the least significant multiplier decimal digit.

4,484,301

ARRAY MULTIPLIER OPERATING IN ONE'S COMPLEMENT FORMAT

William L. Borgerding, Minnespolis, and Vithal R. Patel, New Brighton, both of Minn., assignors to Sperry Corporation, New York, N.Y.

Filed Mar. 10, 1981, Ser. No. 242,214
Int. Cl.[3] G06F 7/52
U.S. Cl. 364—760 14 Claims



1. Given a binary multiplicand of less than or equal to $(x \cdot 2^z)$ bits in length, and given a binary multiplier of less than or equal to $(y \cdot 2^z)$ bits in length, a digital logic apparatus, organized as an array assembly of x identical subassemblies each of 2^{z-1} successive ranks, for performing a binary multiplication in y successive cycles, said performing being essentially by multiplying upon each of said y successive cycles in one's complement format the entire said multiplicand by successive ones of y equal parts of 2^z bits each of said multiplier, by positioning the successive partial products and carries developed thereby, and by adding the final partial product to the final partial carry in order to produce that final product which is the multiplication of said multiplicand and said multiplier, said apparatus comprising:

MULTIPLICAND SELECTOR means for selecting x successive one-bit-overlapping (2^z+1)-bit-each multiplicand parts of said multiplicand and distributing each said multiplicand part to successive said x identical subassemblies of said array assembly, and for further selecting successive one-bit-overlapping three-bit-each multiplicand subparts of said (2^z+1)-bit-each multiplicand parts and further distributing successive said multiplicand subparts to successive ones of $(z+1)$ MULTIPLICAND SELECTOR RANK N means which are within each said x identical subassemblies, which said successive ones of $(z+1)$ MULTIPLICAND SELECTOR RANK N means are uniquely associated with each corresponding one of said $(z+1)$ successive ranks of each said x identical subassemblies, said one-bit-overlapping three-bit-each multiplicand subparts of said one-bit-overlapping (2^z+1)-bit-each multiplicand parts thusly being of number $(z+1)$ subparts and being of the sequence (0,1,2), (2,3,4,), (4,5,6), and continuing to $(2^z-1, 2^z, 2^z+1)$;

MULTIPLIER SELECTOR means for selecting upon each of said y successive cycles successive multiplier parts of 2^z bits each from said multiplier;

MULTIPLIER PREPROCESSOR means for preprocessing successive said 2^z bit multiplier parts sequentially from least significant bits to most significant bits through operating upon successive bit pairs of said multiplier part by first-detecting any binary 11 condition in each successive two bit pair of said multiplier part and IF said binary 11 condition is first-detected THEN adding a carry to the least significant bit position of the next more significant two bit pair save that when said binary 11 condition is first-detected on the most significant bit pair of said multiplier part then said carry is added to the least significant bit position of the least significant bit pair of the next successive multiplier part ELSE doing nothing to said next more significant two bit pair, continuing until all said successive bit pairs of said multiplier part are sequentially operated upon to generate a 2^z bit preprocessed multiplier part;

preprocessed multiplier part distribution means for distributing 2^{z-1} successive two bit pairs of said 2^z bit preprocessed multiplier part to respectively successive said MULTIPLICAND SELECTOR RANK N means as are uniquely associated with said $z+1$ successive ranks, and as are contained within each, of said x identical subassemblies;

x identical subassemblies each of 2^{z-1} successive ranks for multiplying in one's complement format upon each of said y successive cycles successive said preprocessed multiplier parts to the entire said multiplicand, each said x identical subassemblies comprising:

$(z+1)$ MULTIPLICAND SELECTOR RANK N means which are uniquely associated with said $(z+1)$ successive ranks responsive to the binary value of corresponding successive two bit pairs of said total 2^{z-1} two bit pairs of said preprocessed multiplier part, received from said preprocessed multiplier distribution means, for manipulating corresponding ones of said $(z+1)$ multiplicand subparts in the manner corresponding to the following binary values

00 convert the multiplicand subpart to binary 0's and distribute to a corresponding RANK ADDER means

01 select the multiplicand subpart as is and distribute to said corresponding RANK ADDER means

10 left shift the multiplicand subpart 2 bit positions and distribute to said corresponding RANK ADDER means

11 form the one's complement of the multiplicand subpart and distribute to said corresponding RANK ADDER means in order to form manipulated multiplicand subparts;

$(z+1)$ RANK ADDER means which are uniquely associated with said $(z+1)$ successive ranks for serially adding in one's complement form by ranks the sum from the previous rank one of said RANK ADDER means, plus the carry from the previous rank one of said RANK ADDER means, plus said manipulated multiplicand subpart received from said corresponding one of said $(z+1)$ MULTIPLICAND SELECTOR RANK N means in order to form a sum and a carry which are received at the next higher rank, or in the case of the highest $(z+1)$ 'th rank and RANK ORDER means which sum and which carry are called a partial product and a partial carry;

partial product SUM REGISTER holding means for holding successive ones said partial products as are developed upon said y successive cycles and for providing each held said partial product right shifted 2^z bits back to the 0'th rank ones of said RANK ADDER means as a sum input, wherein after said y successive cycles said held one of said partial products will be said final partial product;

partial CARRY REGISTER holding means for holding successive ones of said partial carries as are developed upon said y successive cycles, and for providing each held said partial carry right shifted 2 bits back to said 0'th rank ones of said RANK ADDER means as a carry input, wherein after said y successive cycles said held one of said partial carries will be said final partial carry; and

full final adder means for adding said final partial product and said final partial carry to produce said final product;

whereby said binary multiplication has been accomplished in one's complement format.

4,484,302

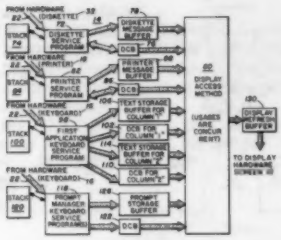
SINGLE SCREEN DISPLAY SYSTEM WITH MULTIPLE VIRTUAL DISPLAY HAVING PRIORITIZED SERVICE PROGRAMS AND DEDICATED MEMORY STACKS

William C. Cason, Austin; Ward A. Kuecker, Round Rock, and Paul R. Herrold, Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 20, 1980, Ser. No. 208,817

Int. Cl.³ G06F *3/14, 9/46*

U.S. Cl. 364—900 **9 Claims**



1. Apparatus for generating multiple virtual displays on a single display screen, comprising:

a single processor for controlling the operation of said apparatus,

a partitioned memory having a plurality of dedicated areas corresponding to a number of multiple virtual displays on the single display screen, each of said dedicated areas including a service program area, a stack element area, a buffer area and a display control block area,

a display access method program stored in said memory for running a plurality of service programs stored in said service program areas, each of said service programs having an interrupt priority and associated with a separate virtual display on said single display screen, and

an interrupt arbitrator responsive to an interrupt calling a high priority service program for interrupting the processing by the processor of information on the virtual display associated with a low priority service program, said interrupt initiating the processing by said processor of information on the virtual display associated with said high priority service program.

4,484,303

PROGRAMMABLE CONTROLLER

Salvatore R. Provanzano, Melrose; Wilbert H. Aldrich, Winchester, both of Mass.; Robert A. D'Angelo, Windham, N.H.; Emil P. Drottar, Ipswich, Mass.; John J. Finnegan, Jr., Hudson, N.H.; James Heom, Bedford, Mass.; Lawrence W. Hill, Arlington, Mass.; Ronald D. Malcolm; Michael C. Nollet, both of Andover, Mass.; Baruch S. Perlman, Cambridge, Mass.; Michael B. Tressler, Tewksbury, Mass.; John E. Van Schalkwyk, Andover, Mass., and Kincade N. Webb, Cambridge, Mass., assignors to Gould Inc., Rolling Meadows, Ill.

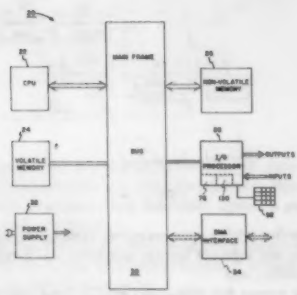
Division of Ser. No. 049,895, Jun. 19, 1979,. This application Jul. 20, 1981, Ser. No. 284,955

Int. Cl.³ G06F *15/46*

U.S. Cl. 364—900 **4 Claims**

1. An improved programmable controller of the type having processing means including a central processing unit (CPU), including associated means for solving user logic defining a control program comprising a plurality of nodes arranged in a network format comprising lines of nodes, each node representing a user selectable circuit element that can reference a selected coil power bit so as to determine the logical output of the node, the logical outputs of the lines of nodes in such networks each represented by a coil power bit, an addressable memory for the storage of data words corresponding to said user logic representing the user defined nodes, and an input-/output (I/O) system for communicating input data from external devices to the processing means and for transferring output data representing the logical outputs of at least some of said lines of nodes from the processing means to the external devices for control thereof in response to the control program, and a bus interconnecting the CPU, addressable memory and I/O system, wherein the improvement comprises:

(A) a first-in, first-out (FIFO) memory connected to the bus for receipt of user node data words from the addressable memory, the FIFO memory retrieving and outputting said data on a first-in, first-out basis, and further wherein the



output of the FIFO memory contains said data words and is connected to the bus for simultaneous transfer to the CPU and the I/O system,

(B) means included in the CPU logic solver means and interconnected to the bus for determining from the data word received from the FIFO memory the contact type of each node representing a relay element, and

(C) means included in the I/O system and interconnected to the bus for receiving the same data word received by the CPU from the FIFO memory and for substantially simultaneously determining the state of the coil power bit referenced by the relay element in the data word,

whereby a single data word represents different information to different portions of the programmable controller for its substantially simultaneous execution.

4,484,304

TRANSACTION EXECUTION SYSTEM HAVING KEYBOARD AND MESSAGE CUSTOMIZATION, IMPROVED KEY FUNCTION VERSATILITY AND MESSAGE SEGMENTATION

Robert W. Anderson, Morgan Hill; May L. Gee, San Jose, both of Calif., and Alice K. McMullen, Charlotte, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 009,384, Feb. 2, 1979, Pat. No. 4,319,336. This application Oct. 14, 1981, Ser. No. 311,372

Int. Cl.³ G06F *3/04, 3/14*

U.S. Cl. 364—900 **7 Claims**

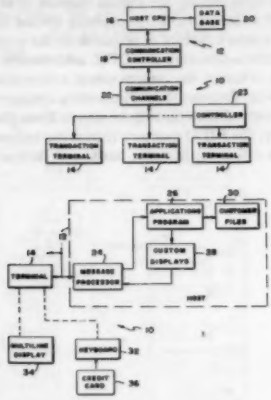
1. A terminal for use in a transaction execution system which includes said terminal remote from and in communication with a host data processing system, said terminal comprising:

means operable by a customer for selecting a transaction step;

segment storage means for storing a plurality of message segments;

message storage means for storing a host message received from said host data processing system, said host message selectively including one or more message segment identifiers;

execution means for executing said selected transaction step including means for generating from a host message pertaining to said selected transaction step at least one display message selectively by replacing each message segment



identifier with a corresponding message segment selected from said segment storage means by said message segment identifier; and

display means for displaying said at least one display message to said customer.

4,484,305

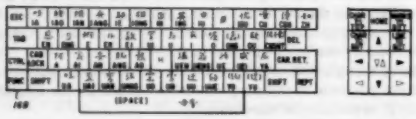
PHONETIC MULTILINGUAL WORD PROCESSOR

Paul Ho, 2042 Sanborn Ave., Los Angeles, Calif. 90027

Filed Dec. 14, 1981, Ser. No. 330,266

Int. Cl.³ G06F *15/38*

U.S. Cl. 364—900 **5 Claims**



1. A phonetic multi-lingual word processor comprising: a display means having a screen; a keyboard connected to the display means for causing characters of a selected language each representing the consonant and vowel portions of corresponding words to be displayed on the screen of said display means, said keyboard having a plurality of keys respectively having first inscriptions inscribed thereon corresponding phonetically to the consonant portions of the words represented by said characters, and said keys having second inscriptions inscribed thereon corresponding phonetically to the vowel portions of the words represented by said characters; a memory in which all of the characters to be displayed on said screen are stored as multi-bit digital signals, with each such character being stored at a different address location; control circuitry interconnecting the keyboard, the display means and the memory and operating so that the actuation of a selected key corresponding phonetically to the consonant sound of a desired character and to the subsequent actuation of a second key corresponding to the vowel sound of the desired character causes a number of said memory locations in said memory to be addressed so that a plurality of characters including the desired character and variants of the desired character to appear on a first portion of said screen; and manually operated control means connected to said display means for selecting the desired character from the displayed characters and for transferring the desired character to a second portion of said screen.

4,484,306

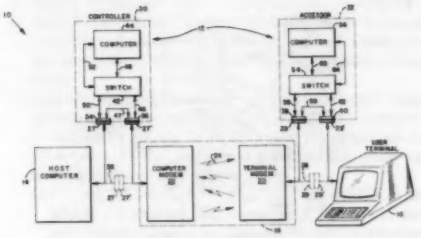
METHOD AND APPARATUS FOR CONTROLLING ACCESS IN A DATA TRANSMISSION SYSTEM

Antin U. Kulczycky, Cinnaminson, N.J., and Kurt A. Goszyk, Washington Crossing, Pa., assignors to Exide Electronics Corporation, Philadelphia, Pa.

Filed Mar. 22, 1982, Ser. No. 360,195

Int. Cl.³ G06F *15/16*

U.S. Cl. 364—900 **12 Claims**



1. A computer access control system for a data processing system including a host computer (**14**) to be accessed, at least one user terminal (**16**) for accessing the host computer, and transmission means (**18**) affording communication between the host computer and the user terminal, comprising

(a) controller switch means (**42**) connected between the transmission means and the host computer, said controller switch means being operable between a normal first position and a second position;

(b) first computer means (**44**) connected with said controller switch means for switching said controller switch means between its first and second positions, respectively, said controller switch means when in its normal first position permitting transmission of electrical signals between the transmission means and said first computer means and said controller switch means when in its second position permitting transmission of electrical signals between the transmission means and the host computer;

(c) accessor switch means (**54**) connected between the transmission means and the user terminal, said accessor switch means being operable between a normal first position and a second position;

(d) second computer means (**56**) connected with said accessor switch means for switching said accessor switch means between its first and second positions, respectively, said accessor switch means when in its normal first position permitting transmission of electrical signals between the transmission means and the user terminal, said first and second computer means switching said controller and accessor switch means respectively to their first positions upon operation of the user terminal, thereby to permit transmission of electrical signals between said first and second computer means;

(e) said first computer means including

(1) memory means storing a given algorithm; and

(2) microcomputer means for generating and transmitting a random question signal in response to operation of the user terminal; and

(f) said second computer means including

(1) memory means storing said given algorithm; and

(2) microcomputer means for receiving said random question signal and for generating and transmitting an answer signal in response to said random question signal, said first computer microcomputer means also generating an answer signal in response to said random question signal, said first computer microcomputer means com-

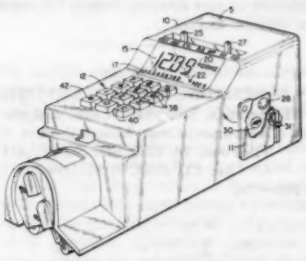
paring said answer signals, said first computer means switching said controller switch means to its second position and said second computer means switching said accessor switch means to its second position when said answer signals are the same, thereby to permit transmission of electrical signals between the user terminal and the host computer.

4,484,307

ELECTRONIC POSTAGE METER HAVING IMPROVED SECURITY AND FAULT TOLERANCE FEATURES

Jesse T. Quatse, Sausalito; Donald E. Dodge, Jr., San Francisco, and Richard K. Dove, Piedmont, all of Calif., assignors to f.m.e. Corporation, Hayward, Calif.

Continuation of Ser. No. 037,578, May 9, 1979, abandoned. This application Feb. 16, 1982, Ser. No. 349,285
Int. Cl.[3] G06F *15/20*
U.S. Cl. 364—900 21 Claims



1. In a microcomputerized postage meter having a microcomputer programmed for supervising the printing operation and for generating, maintaining, and verifying accounting information, a postage printing mechanism coupled to the microcomputer for printing postage in response to instructions from the microcomputer, and input means coupled to the microcomputer for communicating data to the microcomputer, the microcomputer and printing mechanism being located within a secure housing, the improvement comprising:

first and second independent non-volatile memory means coupled to the microcomputer and located within the secure housing;

the programmed microcomputer including means for storing a particular item of accounting information in each of corresponding locations of the first and second non-volatile memory means, means for retrieving the contents of the corresponding locations, and means for comparing the contents of the corresponding locations; and

non-user-resettable means coupled to the microcomputer for deactivating the meter in response to a disagreement between the contents of the corresponding locations, the non-user-resettable means for deactivating the meter being located within the secure housing, and, once set, being beyond control of the microcomputer;

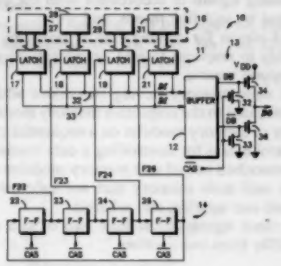
the non-user-resettable means for deactivating the meter having associated means coupled to the first and second non-volatile memory means for preventing the microcomputer from writing data into either of the first and second non-volatile memory means and associated means coupled to the postage printing mechanism for preventing activation of the postage printing mechanism.

4,484,308

SERIAL DATA MODE CIRCUIT FOR A MEMORY

Alan J. Lewandowski, and Jerry D. Moench, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 23, 1982, Ser. No. 422,047
Int. Cl.[3] G06F *1/04*
U.S. Cl. 364—900 6 Claims



1. In a memory for providing a plurality of data bits in response to a single address and providing the plurality of data bits in serial form in response to a data valid signal on an output terminal, a circuit comprising:

output means coupled to a common data bus for providing a data bit on the output terminal in response to each occurrence of the data valid signal;

a plurality of data latches coupled to the common data bus, each data latch containing data bit which is coupled to the data bus in response to receiving a data latch enable signal associated therewith; and

a plurality of interconnected flip-flops responsive to removal of the data valid signal for providing each of the data latch enable signals to the data latch with which it is associated in a predetermined sequence,

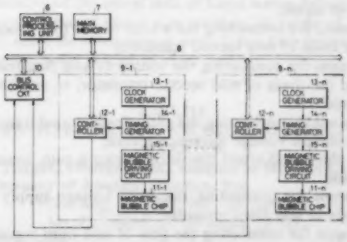
wherein a particular data latch is enabled by receiving the data latch enable signal with which it is associated sufficiently prior to the output means receiving the data valid signal so that the output means has received the data contained in the particular data latch on the common data bus prior to receiving the data valid signal.

4,484,309

MAGNETIC BUBBLE MEMORY DEVICE

Mamoru Sugie; Takashi Toyooka, both of Sayama; Hirokazu Aoki, Hachioji, and Kazuya Kamiyama, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 19, 1982, Ser. No. 409,557
Claims priority, application Japan, Aug. 19, 1981, 56-128759
Int. Cl.[3] G11C *8/00*
U.S. Cl. 365—1 10 Claims



1. A magnetic bubble memory device comprising:

a plurality of memory modules coupled over a shared com-

munication link to a main memory, each of said memory modules including

at least one magnetic bubble chip,

first means for generating a respective clock signal that establishes the data transmission speed for data transmission relative to that module,

second means, coupled to said first means, for generating timing signals in accordance with the clock signal generated by said first means, and

third means for driving said at least one magnetic bubble chip in response to said timing signals generated by said second means;

said main memory having successive addresses which are allocated to the respective memory modules of said plurality of memory modules on a sequential cyclical bases; and

control means for controlling a data transmission between a prescribed one of said memory modules and the addresses in said main memory that are successively allocated to said one module; and wherein

the clock signals for at least two of said memory modules differ from one another.

4,484,310

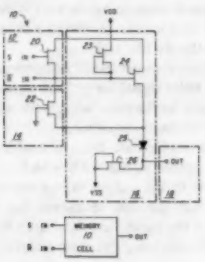
STATIC NONINVERTING MEMORY CELL FOR ONE PROPAGATION DELAY MEMORY CIRCUITS

Chauncey L. Everett; Theodore W. Houston, both of Richardson, and Henry M. Darley, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 29, 1982, Ser. No. 363,194

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—174 **20 Claims**



1. A static noninverting memory cell for a one propagation delay memory circuit, which comprises:

(a) a first field effect transistor having a gate, source, and drain;

(b) a second field effect transistor having a gate, source, and drain;

(c) means for connecting a drain voltage supply to the drain of said first transistor;

(d) means for connecting the gate of said first transistor to an input signal;

(e) means for connecting the source of said first transistor to the drain of said second transistor;

(f) means for connecting the source of said first transistor, and the drain of said second transistor, to another input signal;

(g) means for connecting the gate of said second transistor to a constant voltage reference source;

(h) a third field effect transistor having a gate, source, and drain;

(i) means for connecting the drain voltage supply to the drain of said third transistor;

(j) means for connecting the gate of said third transistor to the source of said third transistor;

(k) means for connecting the source-gate of said third transistor to the drain of said second transistor, and the source of said first transistor;

(l) a fourth field effect transistor having a gate, source, and drain;

(m) means for connecting the drain voltage supply to the drain of said fourth transistor;

(n) means for connecting the gate of said fourth transistor to the source-gate of said third transistor, and the source-drain of said first and second transistor, respectively;

(o) means for connecting the source of said fourth transistor to the source of said second transistor;

(p) a diode having a cathode and an anode;

(q) means for connecting the anode of said diode to the source of said second, and said fourth, transistor;

(r) a fifth field effect transistor having a gate, source, and drain;

(s) means for connecting the cathode of said diode to the drain of said fifth transistor;

(t) means for connecting the gate of said fifth transistor to the source of said fifth transistor;

(u) means for connecting the gate-source of said fifth transistor to a source voltage supply;

(v) said third, fourth, and fifth field effect transistors, and said diode defining a memory section in which a logic state may be retained; and

(w) output means connected at a location between the cathode of said diode and the drain of said fifth transistor and responsive to said memory section for sensing the logic state retained therein.

4,484,311

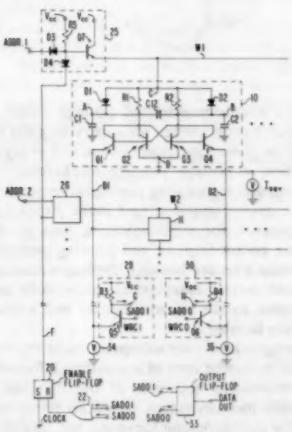
SYNCHRONOUS SENSE AMPLIFIER

William H. Herndon, Sunnyvale, Calif., assignor to Fairchild Camera & Instrument Crop., Mountain View, Calif.

Filed Jun. 10, 1982, Ser. No. 387,111

Int. Cl.³ G11C *7/00, 11/40*

U.S. Cl. 365—190 **9 Claims**



1. A circuit for use in controlling a memory cell coupled to a word line and to first and second bit lines comprising:

an enabling flip-flop having first and second input terminals, and having an output terminal, the first terminal for being connected to a source of enabling signals;

a word line addressing circuit connected to the output of the enabling flip-flop and to the word line, and having an address terminal for receiving address information;

first and second read/write circuits connected to corresponding first and second bit lines, each of the read/write circuits including a control node for receiving control signals and an output node; and

logic gate means having an output connected to the second input terminal of the enabling flip-flop, and having first

and second input nodes connected to the corresponding output node of each of the first and second read/write circuits.

4,484,312

DYNAMIC RANDOM ACCESS MEMORY DEVICE

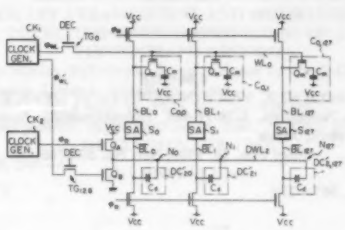
Tomio Nakano; Masao Nakano, both of Kawasaki; Yoshihiro Takemae, Yokohama; Norihisa Tsuge, Kamakura, and Tsuyoshi Ohira, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 25, 1982, Ser. No. 392,077

Claims priority, application Japan, Jun. 29, 1981, 56-99753

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—233 **12 Claims**



1. A dynamic random access memory device, comprising:

first and second power supplies, the potential of said first power supply being lower than that of said second power supply;

a first clock generator, operatively connected to said second power supply, for generating a first clock signal having a potential higher than the potential of the second power supply and a second clock signal having a potential lower than or equal to the potential of said second power supply;

a second clock generator, operatively connected to said second power supply, for generating a third clock signal having a potential higher than the potential of said second power supply, said third clock signal generated alternately with said first and second clock signals;

a plurality of word lines, operatively connected to said first clock generator, selectively driven by said first clock signal;

a plurality of pairs of bit lines, intersecting said word lines, each said pair of bit lines operatively connected to said second clock generator and precharged by said second power supply in response to said third clock signal;

a plurality of sense amplifiers, respectively, operatively connected between said pairs of bit lines, for sensing the difference in potential between each of said pairs of bit lines;

a plurality of one-transistor, one-capacitor-type memory cells, respectively, operatively connected at said intersections of said word lines and said bit lines;

a plurality of dummy cells, respectively, operatively connected to each of said bit lines, each of said dummy cells comprising:

a capacitor having a first electrode connected to one of said bit lines and a second electrode; and

a connection node located between said second electrode of said capacitor and said second clock generator;

at least one charging means, each said at least one charging means operatively connected to said connection nodes of said dummy cells, respectively, and operatively connected to said second clock generator, for charging said capacitor of each of said dummy cells upon receipt of said third clock signal; and

at least one discharging means, each discharging means operatively connected to said connection nodes of said dummy cells, respectively, and operatively connected to said first clock generator, for discharging said capacitor of each of said dummy cells upon receipt of said second clock signal.

4,484,313

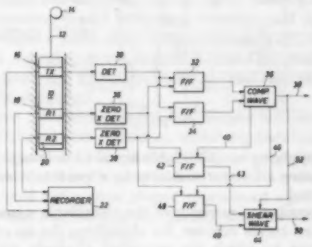
SYSTEM FOR MEASURING SHEAR WAVE TRAVEL TIMES

John R. Dennis, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Continuation-in-part of Ser. No. 141,015, Apr. 17, 1980, abandoned. This application Nov. 16, 1981, Ser. No. 321,351

Int. Cl.³ G01V *1/40, 1/20*

U.S. Cl. 367—27 **5 Claims**



1. A system for detecting acoustic shear wave travel times in earth formations penetrated by a well borehole, comprising:

means for repetitively generating pulses of acoustic energy in a well borehole and for generating a first timing control pulse coincident with each such generation of acoustic energy;

first and second acoustic receiver means spaced longitudinally from each other by a distance of approximately two feet and from said acoustic generating means by a distance of approximately four feet to the nearest receiver in a well borehole;

first and second event detection means responsive to zero crossings and connected to the outputs respectively of said first and second acoustic receiver means and capable of generating output signals upon the occurrence of zero crossing events in the outputs of said receiver means;

means responsive to said timing control pulse and said event detection means for generating compression wave arrival signals indicative of the travel time of compression waves between said longitudinally spaced receiver means and for generating second, third and fourth timing control pulses, at times beginning at 1.55 times the compression wave travel time and 1.90 times the compressional waves travel time from said acoustic generating means to said first and second acoustic receiver means; and

means responsive to said second, third and fourth timing control pulses and to said output signals of said event detection means for generating shear wave arrival signals indicative of the travel time of shear waves falling within a predetermined travel time ratio in the range of 1.55 to 1.90 times the compression wave travel time between said longitudinally spaced receiver means.

4,484,314

COP SWITCH-POSITION ENCODER, METHOD AND APPARATUS

Ben B. Thigpen, Houston, Tex., assignor to Western Geophysical Company of America, Houston, Tex.

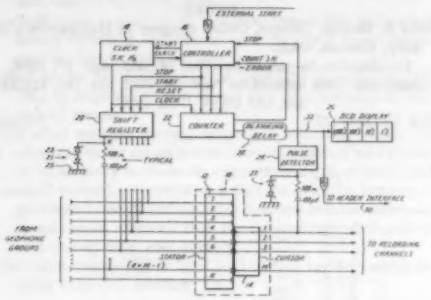
Filed Aug. 20, 1981, Ser. No. 294,585

Int. Cl.³ G01C *17/38*; G01K *15/00*

U.S. Cl. 367—58 **14 Claims**

1. For use with a common depth point switching apparatus for the type consisting of a stator having a plurality of contacts connected to a like plurality of geophone lines and a cursor

having a lesser plurality of contacts that are electrically engageable with a similar number of selected stator contacts, the respective cursor contacts being connected to the inputs of a corresponding set of recording channels, an encoder comprising:



means for applying an identifiable signal to at least a preselected group of stator contacts in a predetermined sequence; and

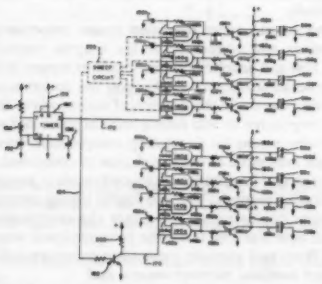
means, responsive to presence of the identifiable signal on a preselected cursor contact, for identifying the set of geophone lines to which the recording channels are connected.

4,484,315

ULTRASONIC PEST CONTROL DEVICE

Lester B. Hall, Kenmore, N.Y., assignor to Gary L. Hal, Kenmore, N.Y.

Filed Sep. 20, 1982, Ser. No. 422,447
Int. Cl.³ H04B *1/02*
U.S. Cl. 367—139 **13 Claims**



1. Apparatus for generating and radiating ultrasonic sound waves for the control of pests comprising:

(a) a housing having at least one end;

(b) a plurality of transducers carried by said housing adjacent said one end and arranged in first and second groups for providing sound waves when driven by corresponding electrical signals, said sound waves being at frequencies normally inaudible to humans and intolerable by pests such as rodents and insects, each of said transducers having a natural frequency of oscillation, said transducers of said first group operating in a frequency range from about 20 kilohertz to about 35 kilohertz and said transducers of said second group operating in a frequency range above about 50 kilohertz;

(c) first driver means operatively connected to said transducers of said first group for applying electrical signals to said transducers to provide said sound waves, said first driver means applying to each of said transducers of said first group an electrical signal having a frequency different from the natural frequency of said transducer to provide a composite output in the form of a random pattern of frequencies and amplitude peaking in the ultrasonic frequency range;

(d) second driver means operatively connected to said transducers of said second group for applying electrical signals to said transducers to provide said sound waves, said second driver means applying to each of said transducers of said second group an electrical signal the same as the natural frequency of said transducer;

(e) switching means operatively connected to said first and second driver means for causing said first and second groups of transducers to operate one at a time; and

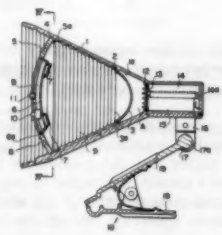
(f) means carried by said housing for supplying electrical current to said first and second driver means.

4,484,316

ACOUSTIC VERMIN-REPELLENT DEVICE

Susumu Nakagawa, 5-28-11-608, Higashigotanda, Shinagawa-ku, Tokyo, Japan

Filed Jun. 16, 1983, Ser. No. 504,785
Int. Cl.³ H04B *1/02*
U.S. Cl. 367—139 **7 Claims**



1. An acoustic vermin-repellent device comprising a trumpet-shaped main body, a first bowl-shaped reflection plate disposed in the vicinity of the small diameter end portion within said trumpet-shaped main body, a second bowl-shaped reflection plate disposed in the vicinity of the large diameter end portion within said trumpet-shaped main body so as to have its concave surface opposed to the concave surface of said first bowl-shaped reflection plate, an acoustic generator attached to the concave surface of said second bowl-shaped reflection plate so as to be directed to the concave surface of said first bowl-shaped reflection plate, actuating means for causing said acoustic generator to fulfill its function, and a plurality of outlets formed around said second bowl-shaped reflection plate for emitting out of said trumpet-shaped main body acoustic waves to be generated by said acoustic generator.

4,484,317

MULTIBEAM LENS/FILTER COMBINATION FOR SONAR SENSOR

Warren A. Anderson, Tiverton, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

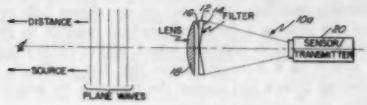
Filed Apr. 7, 1980, Ser. No. 138,014
Int. Cl.³ H04B *13/00*
U.S. Cl. 367—150 **8 Claims**

1. An acoustic antenna comprising:

transducer means for converting applied signals;

an acoustic lens in acoustic communication with said transducing means; and

a filter plate located between said acoustic lens and said transducer means, said filter plate comprises a lens stop



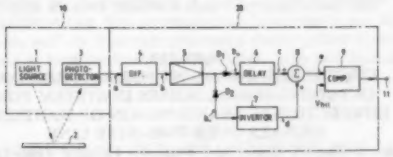
having an automatically variable aperture of a diameter that is a linear function of the reciprocal of the frequency.

4,484,318

CIRCUIT ARRANGEMENT AND METHOD FOR DETECTING UNRECORDED ZONES OF A PHONOGRAPH RECORD

Yutaka Morita, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Mar. 16, 1983, Ser. No. 475,816
Claims priority, application Japan, Mar. 25, 1982, 57-47747
Int. Cl.³ G11B *3/38, 17/06*
U.S. Cl. 369—41 **8 Claims**



1. A circuit arrangement for detecting unrecorded zones of a phonograph record, comprising:

(a) a differentiator responsive to an output signal from a photodetector which receives light reflected at the surface of the phonograph record;

(b) means for separating a positive differential pulse from a negative differential pulse both included in the output signal from said differentiator;

(c) a delay circuit for retarding said positive differential pulse by a predetermined period of time;

(d) an inverting circuit for inverting said negative differential pulse to produce another positive pulse;

(e) an adder for adding the output signal from said delay circuit to the output signal from said inverting circuit; and

(f) a comparator for producing an output signal when the amplitude of the output signal from said adder exceeds a predetermined value.

4,484,319

APPARATUS FOR LOCATING A TRACK ON DISC-LIKE OPTICAL INFORMATION CARRIERS

Kenji Koishi, Suita; Tomio Yoshida, Katano; Isao Satoh, and Shunji Harigae, both of Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Sep. 11, 1981, Ser. No. 301,420
Claims priority, application Japan, Sep. 19, 1980, 55-130942; Oct. 1, 1980, 55-138165
Int. Cl.³ G11B *21/10*
U.S. Cl. 369—46 **2 Claims**

1. A track locating apparatus for an optical information recording and reproducing system, in which a light spot is radiated on a disc-like information carrier having optically detectable guide tracks, and a reflected light beam from a guide track is received by a photoelectric detector having two light receiving sections divided by a division boundary extending in a direction corresponding to a tangent of the guide tracks, said track locating apparatus comprising:

a differential amplifier connected to said photoelectric detector for producing a difference signal between output signals of said two light receiving sections of said photoelectric detector;

a summing amplifier connected to said photoelectric detector for producing a sum signal of said output signals of said two light receiving sections;

a high-frequency pre-amplifier connected to said photoelectric detector for producing a reproduced signal;

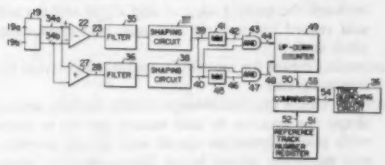
detecting means connected to said differential amplifier, said summing amplifier and said high-frequency pre-amplifier for detecting a direction in which said light spot traverses the guide track, said detecting means comparing a phase of said difference signal with a phase of one of said sum signal and said reproduced signal thereby to produce a direction signal indicating whether said light spot traversed a guide track radially inwardly or outwardly;

said detecting means including means for shaping said sum signal, said difference signal and said reproduced signal to shaped pulses;

means for transforming a pulse shaped difference signal to a narrow pulse difference signal representing the leading edge of said pulse shaped difference signal;

means for transforming at least one of a pulse shaped sum signal and a pulse shaped reproduced signal to a narrow pulse representing the leading edge of the transformed pulse shaped signal;

a first AND circuit for comparing a phase of said narrow pulse difference signal with a phase of one of a pulse



shaped sum signal and a pulse shaped reproduced signal, said first AND circuit producing said direction signal indicating that said light spot has traversed the guide track radially inwardly when the compared phases are substantially coincident with each other;

a second AND circuit for comparing a phase of a pulse shaped difference signal with a phase of a transformed narrow pulse representing a leading edge of one of said pulse shaped sum signal and said pulse shaped reproduced signal, said second AND circuit producing said direction signal indicating that said light spot has traversed the guide track radially outwardly when the compared phases are substantially coincident with each other; and

counting means responsive to said direction signal from said detecting means for counting said direction signal upwardly or downwardly depending on the direction indicated by said direction signal thereby to count a net number of guide tracks traversed by said light spot, said counting means including an up-down counter having two clock inputs, one of said clock inputs being supplied with said direction signal indicative of the inward traverse supplied from said first AND circuit, the other clock input being supplied with said direction signal indicative of the outward traverse supplied from said second AND circuit, thereby to count said net number of the guide tracks traversed by the light spot, whereby a track location is determined in accordance with said net number of track guides traversed by the light spot.

4,484,320

APPARATUS AND METHOD FOR CUTTING INFORMATION INTO A METALLIC RECORD CARRIER

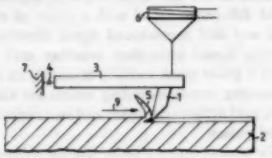
Horst Redlich, Berlin, Fed. Rep. of Germany, assignor to TELDEC Telefunken-Decca-Schallplatten GmbH, Hamburg, Fed. Rep. of Germany

Filed Apr. 7, 1982, Ser. No. 366,394

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1981, 3114108

Int. Cl.³ G11B *3/00*

U.S. Cl. 369—132 **10 Claims**



1. Apparatus for recording an information signal on a record carrier, said recorded information signal having a predetermined maximum modulation pitch angle, comprising

a stylus for cutting a groove in a surface of said record carrier, said stylus having a longitudinal axis, a leading edge substantially parallel to said longitudinal axis and a trailing edge, said stylus being positioned so that the angle θ between the longitudinal axis thereof and a normal to the surface of said record carrier is greater than 10° and not more than a value which would make the angle β between the trailing edge of said stylus and the surface of said record carrier less than said maximum modulation pitch angle;

mounting means for movably attaching said stylus to a fixed structure; and

driving means for electromagnetically exciting said stylus to shape the grooves in said record carrier in accordance with said information signal, said record carrier, stylus, and mounting means being dimensioned to generate an oscillation signal having a frequency which is higher than that of said information signal and superimposing it thereon.

4,484,321

DISC PLAYER FOR A RIGID INFORMATION-CARRYING DISC

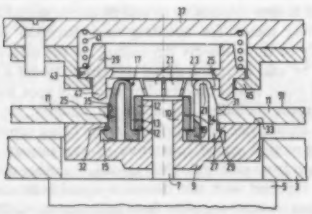
Kurt Eisemann, Moltkestrasse 36, 1000 Berlin 45, Fed. Rep. of Germany

Filed Mar. 28, 1983, Ser. No. 479,307

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1982, 3211361

Int. Cl.³ G11B *3/70, 5/82*

U.S. Cl. 369—270 **3 Claims**



1. A disc player for a rigid information-carrying disc which during the information transfer rotates about the axis of rotation of a turntable, which player has a centering device which comprises a plurality of centering elements which are arranged along a circle, which are connected to a common base ring, and which are each resilient in a radial direction so that the centering elements, which act on the center hole of the disc, keep the disc in a centered position relative to the axis of rotation during its rotation, which player further comprises a lid which as it is closed urges the disc resiliently onto the centering device and against the turntable by means of a disc loader, characterized in that

the centering elements comprise U-shaped members which extend radially outwards from the base ring, their inner limbs being connected to the base ring and projections on the outer limbs engaging an annular recess in the turntable so that the limbs are radially movable in said recess,

the base ring is provided with a collar which surrounds a flanged sleeve with clearance, which flanged sleeve is connected to the turntable, the position of the base ring being fixed by a clamping sleeve which is slid onto the flanged sleeve, so that the collar is clamped between the clamping sleeve and the turntable,

in the absence of an information-carrying disc, the outer limbs spring outwards against a stop ring which is provided on the turntable and which is concentric with the axis of rotation, and

the inner wall of the center hole in the information-carrying disc has a diameter which is smaller than the stop ring.

4,484,322

CIRCUIT ARRANGEMENT FOR SUPPRESSING OUTGOING-SIGNAL NOISES IN SYSTEM FOR BIDIRECTIONAL TRANSMISSION OF DIGITIZED SIGNALS OVER TWO-WIRE LINE

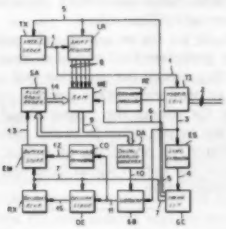
Roberto Fossati, Turin, and Vincenzo Lazzari, Leini-Torino, both of Italy, assignors to Cselt Centro Studi E Laboratori Telecomunicazioni S.p.A., Turin, Italy

Continuation of Ser. No. 356,259, Mar. 8, 1982, abandoned. This application Dec. 16, 1983, Ser. No. 562,997

Claims priority, application Italy, Mar. 9, 1981, 67323 A/81

Int. Cl.³ H04L *5/14;* H04M *1/20, 7/10*

U.S. Cl. 370—32 **8 Claims**



1. In a telephone station having an outgoing branch provided with a signal transmitter and an incoming branch provided with a signal receiver connected via a duplexing terminal to a two-wire line for exchanging voice samples with a remote communicator, said voice samples being digitized with a three-level bipolar NRZI-type code,

the combination therewith of a circuit arrangement for suppressing in said incoming branch noises due to outgoing voice samples imperfectly balanced out by said duplexing terminal, comprising:

timing means controlling the conversion of voice samples generated by said transmitter into code words with a multiplicity of three-level bits traversing said outgoing branch in successive bit periods of a time slot assigned to a code word;

a shift register with n stages in said outgoing branch controlled by said timing means for containing up to n three-level bits in respective stages during each bit period;

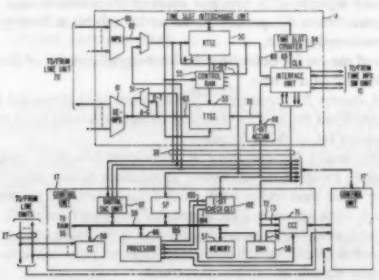
a random-access memory with address inputs connected to said stages and with 2^{n+1} cells addressable by as many combinations of three-level bits in said input and a data output for loading an addressed cell in response to a writing command and extracting the contents thereof in response to a reading commend from said timing means; and

arithmetic means in said incoming branch controlled by said timing means and connected to said data output and to said data input for comparing the contents of an addressed cell during a reading phase of a bit period with a noise signal from said duplexing terminal due to a concurrently transmitted voice sample and for deriving from the result of comparison a corrective signal entered in the same cell during a writing phase of such bit period, said arithmetic means including a subtractor delivering to said receiver a purged sample corresponding to the difference between a noise-contaminated incoming voice sample and said corrective signal, said subtractor having respective inputs connected to said data output and to said duplexing terminal, said arithmetic means further comprising an algebraic adder having a first input connected in parallel with said receiver to an output of said subtractor for receiving an updating signal derived from said purged sample and having a second input connected to said data output, said adder having an output connected to said data input, said timing means comprising a clock circuit responsive to synchronizing bits accompanying incoming voice samples, said clock circuit generating timing pulses controlling at least the loading of said adder with said updating signal during a reading phase of a bit period.

4,484,323
COMMUNICATION ARRANGEMENTS FOR DISTRIBUTED CONTROL SYSTEMS

Hugo J. Beuscher, Glen Ellyn; Harry L. Bosco, Naperville; Allen H. Huizinga, Wheaton, and John R. Williams, Naperville, all of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 14, 1982, Ser. No. 388,276
Int. Cl.³ H04Q *11/04*
U.S. Cl. 370—58 14 Claims



1. A time-division switching system comprising

a plurality of communication units each comprising a communication unit controller and an intervention controller;

a control arrangement for transmitting control messages each control message comprising a plurality of control words;

a time-shared space division switch connected to said communication units and said control arrangement for selectively transmitting said control words to said communication units; and wherein each of said communication units further comprises

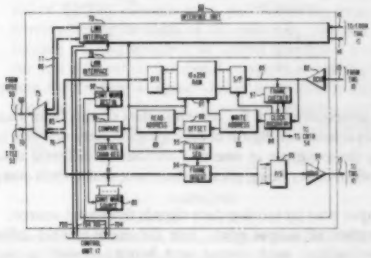
means for receiving said control words transmitted thereto, means for transmitting a first portion of each received control word to said communication unit controller and for transmitting a second portion of each received control word to said intervention controller and; wherein

said intervention controller comprises means responsive to said second portions of said control words for altering the functions performed by said communication unit controller.

4,484,324
CONTROL INFORMATION COMMUNICATION ARRANGEMENT FOR A TIME DIVISION SWITCHING SYSTEM

Milo Orsic, Lincolnwood, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 23, 1982, Ser. No. 410,342
Int. Cl.³ H04Q *11/04*
U.S. Cl. 370—58 24 Claims



1. A control information communication arrangement for a time division switching system comprising

switching means comprising input ports and output ports and

a plurality of control units each connected to at least one of said input ports for transmitting circuit setup request control words each comprising an address portion defining one of said control units and for sequentially transmitting control message control words and each of said control units being connected to at least one of said output ports for receiving control message control words,

wherein said switching means further comprises

control word routing means and

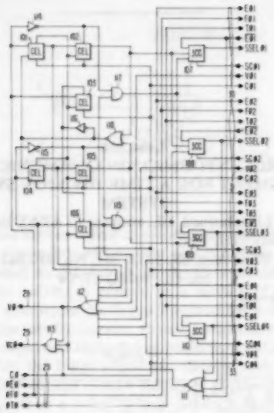
means for transmitting circuit setup request control words and sequentially transmitting control message control words from the ones of said input ports connected to said control units to said control word routing means and

wherein said control word routing means comprises means for receiving circuit setup request control words and control message control words and means responsive to a circuit setup request control word from a given input port for transmitting each control message control word received sequentially from that given input port, to one of said output ports connected to the control unit defined by the address portion of that circuit setup request control word before the receipt by said control word routing means of the next control message control word from that given input port.

4,484,325
FOUR WAY SELECTOR SWITCH FOR A FIVE PORT MODULE AS A NODE ASYNCHRONOUS SPEED INDEPENDENT NETWORK OF CONCURRENT PROCESSORS

Jesse R. Wilson, Austin, and Gary L. Logsdon, Round Rock, both of Tex., assignors to Burroughs Corporation, Detroit, Mich.

Filed Sep. 2, 1982, Ser. No. 414,070
Int. Cl.³ H04J *6/00*
U.S. Cl. 370—60 **8 Claims**



1. A selection switch for receiving data signals from a source in an asynchronous digital communication network and transmitting those signals to one of a number of different destinations, said number being greater than two, said switch comprising:

an input port to receive data signals from said source;

a number of output ports, one for each of said different destinations, each output port being adapted to receive data signals from said input port; and

selection circuit means to receive said data signals preceded by routing bit signals specifying which of said output ports is to be selected for subsequent transmission and to signal the corresponding one of said output ports;

said selection circuit means including means to make its selection utilizing together, the first set of bits of the routing signal received, said first set of bits corresponding to that number of bits necessary to specify any one of said number of output ports, said number of bits being greater than one, said first set of bits then being discarded with the remaining routing signals and data being transmitted to the selected output port for subsequent transmission.

4,484,326
PACKET LOAD MONITORING BY TRUNK CONTROLLERS

Jonathan S. Turner, Evanston, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

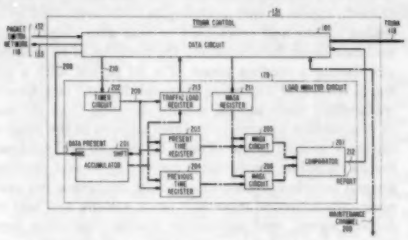
Filed Nov. 4, 1982, Ser. No. 439,079
Int. Cl.³ H04J *3/14;* H04M *3/22*
U.S. Cl. 370—60 **34 Claims**

1. A traffic monitoring arrangement for measuring packet traffic through circuitry interfacing a communication channel with a packet switching network, the invention wherein said circuitry comprises:

means for generating a packet present signal during a communication of each of a plurality of packets;

means responsive to said signal for calculating a first set of bit signals representing the amount of present time consumed in communicating all of said packets;

means for storing a second set of bit signals representing a reference time; and

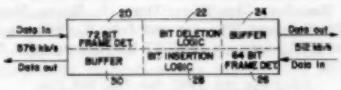


means responsive to subsets of bit signals of said first and second sets of bit signals for generating a report signal indicating excursions of said present time from said reference time.

4,484,327
PULSE CODE MODULATION RATE CONVERTER

Elis D. Hanson, Eatontown, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 2, 1983, Ser. No. 490,948
Int. Cl.³ H04B *12/02;* H04J *3/07*
U.S. Cl. 370—84 **6 Claims**



1. A rate converter, comprising:

first means for supplying multi-channel pulse code modulated signals of X bits per each of Y channels, and at a given frame frequency Z, so as to exhibit a first group transmission rate;

second means for detecting the least significant bit of the last channel of a frame;

third means for counting 2X bits from said detected least significant bit and for deleting from said frame such information bit as there located;

fourth means for counting X additional bits from said bit delete location in successive sequentials S, and for detecting from said frame each such information bit present at each such additional locations, "S" being a number 0, 1, 2, 3, etc. selected in accordance with a second group transmission rate to which said multi-channel pulse code modulation signals are to be converted;

fifth means, operational at said second group transmission rate, for processing such information bits as remain in said frame;

sixth means for detecting the least significant bit of the last channel of said frame as processed at said second group transmission rate;

seventh means for counting 2X bits from said detected processed least significant bit and for inserting thereat a first non-informational dummy signal;

eighth means for counting X additional bits from said dummy bit insertion location in successive sequentials S, and for inserting further non-informational dummy signals at each such location in reconverting said multi-channel pulse code modulation signals to said first group transmission rate; and

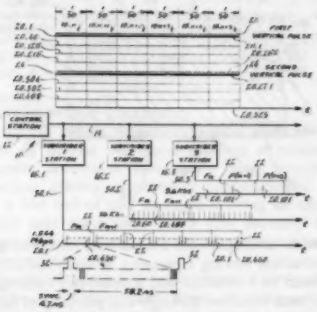
ninth means for providing said re-converted signals as an output of said rate converter.

4,484,328

TELEVISION LINE MULTIPLEXED DATA COMMUNICATION SYSTEM

Hubert J. Schlafly, 27 Orchard Dr., Greenwich, Conn. 06830

Filed Aug. 3, 1981, Ser. No. 289,237
Int. Cl.³ H04J *3/02*
U.S. Cl. 370—85 **16 Claims**



14. A method for communicating data between a central station and a plurality of subscribers at locations having different distances from the central station wherein the data is transmitted from the central station to the subscribers in a signal channel and in television format composed of television lines formed by the data with the television lines arranged in television frames comprising the steps of:

forming television lines with data, with individual television lines being respectively dedicated for the use by individually designated subscribers;

transmitting the television lines in television frame format in said signal channel to the subscribers;

detecting at the subscriber locations those television scan lines which are dedicated to respective subscribers so as to provide the subscribers with the data therein; and

extracting at the subscriber locations the data from the detected television lines.

4,484,329

APPARATUS FOR THE DYNAMIC IN-CIRCUIT ELEMENT-TO-ELEMENT COMPARISON TESTING OF ELECTRONIC DIGITAL CIRCUIT ELEMENTS

Milan Slamka, Weston, and Mamdouh H. Rassem, Mississauga, both of Canada, assignors to Thalamus Electronics, Inc., Mississauga, Canada

Filed Aug. 10, 1981, Ser. No. 291,727
Claims priority, application Canada, Aug. 18, 1980, 358461
Int. Cl.³ G06F *11/00*
U.S. Cl. 371—25 **28 Claims**

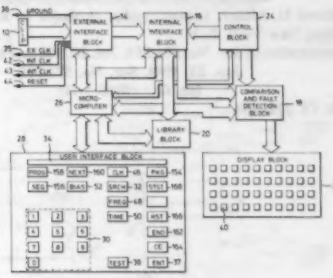
1. Apparatus for the dynamic in-circuit, element-to-element comparison testing of an electronic digital test circuit element while operative in its circuit comprising:

means for accessing at least the operative terminals of the test element for its connection to the apparatus and consequent receipt from the said operative terminals thereof of the respective electric signals produced in the usual operation of the circuit in which the test element is connected;

library means including a plurality of different reference elements and memory means having therein information as to the operating parameters of each of the said reference elements, each reference element being the same as or equivalent to the test element, and each having terminals corresponding to the respective terminals of the respective test element;

computer means for interrogating the memory means and subsequently effecting powering of a selected reference element in accordance with the said information read by the computer means in the memory means for the selected reference element;

signal comparison means for comparing the usual operation electric signals at the said operative terminals of the test element with the corresponding signals at the respective terminals of the reference element and for producing a fault indication if the comparison indicates the presence of a fault;



means for feeding a signal which is an input signal at a terminal of the test element from said accessing means to the corresponding terminal of the reference element, and for feeding a signal which is an output signal at a terminal of the test element to the signal comparison means; and

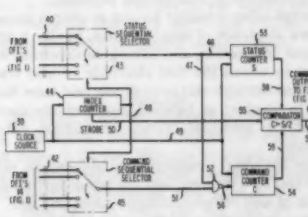
means for feeding a signal which is an output signal at a terminal of the reference element to the signal comparison means for comparison with the respective output signal from the test element.

4,484,330

MAJORITY VOTE CIRCUIT

Gar Moy, Lake Hiawatha, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 8, 1982, Ser. No. 356,045
Int. Cl.³ G06F *11/08*
U.S. Cl. 371—36 **3 Claims**



1. A majority vote circuit comprising

a sole message source,

a receiver for interpreting command messages from said source,

a plurality of channels for transmitting command messages from said source to said receiver,

a status signal generator at the terminus of each of said channels,

first and second scanners for selecting in sequence command and status signals, respectively from said channels,

first and second counters for accumulating the numbers of respective command and status signals in a scanning sequence by said first and second scanners,

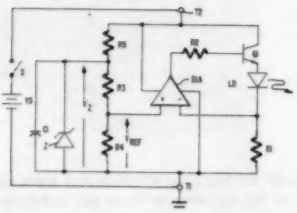
a register for storing the number of channels being scanned by said first and second scanners, and

a comparator jointly responsive to the output counts in said first and second counters when said register number is reached for generating a majority vote signal indicating that the count stored in said first counter exceeds half the count stored in said second counter.

4,484,331
REGULATOR FOR BIAS CURRENT OF SEMICONDUCTOR LASER DIODE

Richard D. Miller, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 284,554, Jul. 20, 1981,. This application Jan. 23, 1984, Ser. No. 572,955
Int. Cl.³ H01S 3/00
U.S. Cl. 372—38 **2 Claims**



1. In combination:

means for supplying an operating voltage between first and second terminals;

a semiconductor laser diode having a facet through which coherent light is emitted responsive to sufficiently large current flow through said laser diode, said coherent light undesirably tending to be of lessened intensity with increased temperature of said laser diode for given flow of current through said laser diode;

a transistor, having a principal current conduction path between first and second electrodes thereof, and having a third electrode the voltage between which and said first electrode controls the conduction of said principal current conduction path, the second electrode of said transistor being connected to said second terminal;

a differential-input amplifier having an output connection to the third electrode of said transistor, having a non-inverting input connection, and having an inverting input connection to which the first electrode of said transistor is connected through said laser diode, said laser diode being poled to conduct in forward direction the current flow through the principal current conduction path of said transistor;

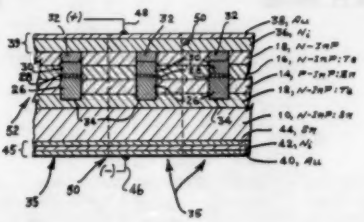
means for applying a temperature-independent voltage between said first terminal and the non-inverting input connection of said differential-input amplifier; and

a negative-temperature-coefficient resistance connected between the inverting input connection of said differential-input amplifier and said first terminal, for conducting the flow of current through the principal current conduction path of said transistor and through said laser diode, and for sensing that flow to develop a voltage for direct-coupled application to the inverting input connection of said differential-input amplifier, the negative temperature coefficient of said resistance being such as to stabilize the intensity of coherent light emitted by said laser diode against variation with temperature and the value of such resistance at any temperature within the range of operation being of such value that the current through said laser diode causes substantial coherent light emission without incurring substantial damage, even cumulatively, to the laser diode facet.

4,484,332
MULTIPLE DOUBLE HETEROJUNCTION BURIED LASER DEVICE

Frank Z. Hawrylo, Trenton, N.J., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 2, 1982, Ser. No. 384,292
Int. Cl.³ H01S 3/19
U.S. Cl. 372—50 **10 Claims**



1. A double heterojunction buried laser comprising:

a bulk structure having a plurality of semiconductor layers deposited on a substrate and a stripe-like opening formed in said bulk structure through said plurality of layers, said bulk structure semiconductor layers including a first layer deposited on said substrate, said first layer preventing the formation of metallic droplets on said substrate and preventing the diffusion of Group II acceptor dopants therein, said first layer composed of an alloy of Group III-V elements and doped n-type with Group VI elements; a second layer deposited on said first layer, said second layer composed of an alloy of Group III-V elements and doped p-type with a Group II element, said second layer being the p-type material in a p-n junction that blocks the flow of current when said buried laser is forward biased; a third layer deposited on said second layer, said third layer composed of an alloy of Group III-V elements and doped n-type with Group VI elements, said third layer being the n-type material of said p-n junction, and said third layer being a diffusion barrier to the acceptor dopants of said second layer; and a capping fourth layer deposited on said third layer, said fourth layer composed of an alloy of Group III-V elements, said fourth layer facilitating current flow;

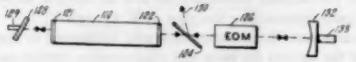
a double heterojunction laser deposited in said stripe-like opening, said laser having a substantially planar face from which lasing light emits, said laser including a plurality of semiconductor layers, said semiconductor layers including a heterojunction first layer deposited on a bottom side of said stripe-like opening, said heterojunction first layer composed of an alloy of Group III-V elements and doped n-type with Group VI elements, said first layer acting as a diffusion barrier to acceptor dopants; a laser region second layer deposited on said heterojunction first layer, said laser region second layer composed of an alloy of Group III-V elements, said laser region second layer being the active region for lasing action and forming resonant cavity means, said laser region second layer abutting on the sides of said third layer of said bulk structure; a heterojunction third layer deposited on said laser region second layer, said third layer composed of an alloy of Group III-V elements and doped p-type with Group II elements; and a capping fourth layer deposited on said heterojunction third layer, said capping fourth layer composed of an alloy of Group III-V elements, the top of said capping fourth layer being substantially coincident with the top of said capping fourth layer of said bulk structure; and

electrical means for providing current paths through said bulk structure and said laser, said electrical means deposited on said bulk structure and said laser.

4,484,333
COUPLED WAVEGUIDE FREESPACE LASER

Peter P. Chenausky, Avon; Richard A. Hart, Wethersfield; Lanny M. Laughman, Bolton; Ronald E. Belek, Coventry, and Robert J. Wayne, Berlin, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Feb. 12, 1982, Ser. No. 348,566
Int. Cl.³ H01S 3/03
U.S. Cl. 372—64 1 Claim



1. A waveguide laser comprising:

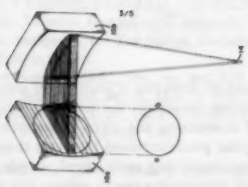
a first optical cavity including a gain medium disposed within an optical waveguide having a predetermined transverse dimension, said cavity being bounded by a diffraction grating disposed a predetermined distance from a first end of said waveguide along an axis passing through said waveguide and a first partially reflective element disposed along said axis adjacent a second end of said waveguide; and

a second optical cavity disposed along said axis and containing polarization-dependent means for coupling radiation out of said laser at an angle with respect to said axis, said second cavity being optically coupled to said first cavity by said first partially reflective element and containing an electro-optic modulator disposed between said polarization dependent means and a substantially 100% reflective element terminating said second optical cavity, in which said first optical cavity is divided into a gain cavity including said waveguide and bounded by said first partially reflective element and a second partially reflective element having a reflectivity of approximately 95% that is positioned adjacent said first end of said waveguide and a line control cavity comprising said diffraction grating and said second partially reflective element, whereby a portion of radiation in said gain medium is reflected with a predetermined frequency dependence from said gain cavity into and out of said line control cavity, so that a spectral line determined by said diffraction grating is enhanced in power, thereby determining the frequency of operation of said laser.

4,484,334
OPTICAL BEAM CONCENTRATOR

Robert J. Pressley, Cupertino, Calif., assignor to Allied Corporation, Morristown, N.J.

Filed Nov. 17, 1981, Ser. No. 322,125
Int. Cl.³ H01S 3/08
U.S. Cl. 372—101 12 Claims

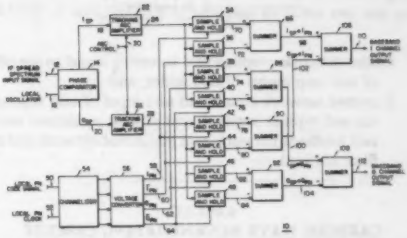


1. An optical beam concentrator comprising both a segmented and a non-segmented cylindrical optical element oriented so that the elements divide a light beam incident on a first element into a plurality of parts and redirect the parts to intersect to form a substantially rectangular area of substantially uniform power density along its length at a predetermined distance from the second element.

4,484,335
METHOD AND APPARATUS FOR DESPREADING A SPREAD SPECTRUM SIGNAL AT BASEBAND

William H. Mosley, and David E. Sanders, both of St. Petersburg, Fla., assignors to E-Systems, Inc., Dallas, Tex.

Filed Oct. 14, 1982, Ser. No. 434,530
Int. Cl.³ H03D 1/24
U.S. Cl. 375—1 8 Claims



1. A baseband correlator circuit for despreading a spread spectrum signal, comprising:

means for translating said spread spectrum signal to baseband to produce an I (in-phase) channel baseband signal and a Q (quadrature) channel baseband signal, said spread spectrum signal utilizing a pseudonoise (PN) code sequence,

means for converting a two-phase local PN signal comprising said PN code sequence into four-phase signals comprising two in-phase PN signals and two quadrature phase PN signals,

means comprising four double balanced multipliers for multiplying said I and Q channel baseband signals by each of said four PN signals to produce first, second, third and fourth product signals,

means for summing said first and second product signals to produce a despread I channel output signal, and

means for summing said third and fourth product signals to produce a despread Q channel output signal.

4,484,336
DIGITAL TRANSMISSION SYSTEMS

Richard J. Catchpole, Bishop's Stortford; Peter J. Dyke, Stansted; Brian S. Farley, Bishop's Stortford, and Harbhajan S. Virdee, Harlow, all of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed May 21, 1982, Ser. No. 380,789
Claims priority, application United Kingdom, Jun. 4, 1981, 8117139
Int. Cl.³ H04B 3/36
U.S. Cl. 375—4 22 Claims

1. A digital transmission system comprising:

a twisted-wire pair transmission line; and

at least one digital repeater coupled to said transmission line having an arrangement to reduce intersymbol interference in an incoming signal while minimizing near-end crosstalk gain, said arrangement including

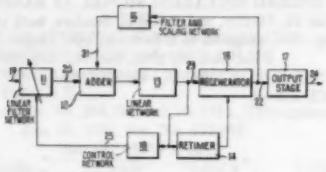
a pulse regenerator and a retimer network having an input and an output,

an adder having two inputs and an output,

a feedback network coupled to said output of said regenerator and retimer network to produce a compensation

signal, said compensation signal being coupled to one of said two inputs of said adder,

an additional network disposed between said output of said adder and said input of said regenerator and retimer network to provide a suitable input signal for said regenerator and retimer network,



a filter network coupling said incoming signal to the other of said two inputs of said adder, and

a control network coupled to said input of said regenerator and retimer network and at least a selected one of said feedback network, said additional network and said filter network.

4,484,337

CARRIER WAVE REGENERATING CIRCUIT

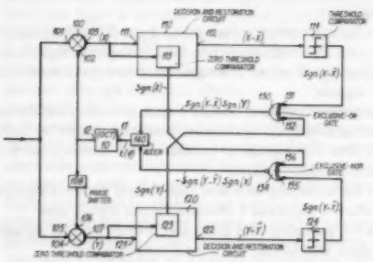
Alain Leclert, Kerleo Ploulec'h, and Georges Verdot, 32, rue de l'Aérodrome, both of 22300 Lannion, France

Filed Jul. 19, 1982, Ser. No. 399,262

Claims priority, application France, Jul. 23, 1981, 81 14343

Int. Cl.³ H03D *3/24*

U.S. Cl. 375—81 **3 Claims**



1. A circuit for regenerating a carrier wave on the basis of a modulated wave, comprising

a voltage-controlled oscillator having a control input and an output supplying the carrier wave,

a first demodulator with two inputs, one receiving the modulated wave and the other being connected to the output of the oscillator,

a second demodulator with two inputs, one receiving the modulated wave and the other being connected to the oscillator through a 90° phase shifter, each demodulator supplying a demodulated signal, respectively X for the first and Y for the second, and means for processing the signals X and Y for producing an error signal $\epsilon(\phi)$, which is applied to the input of the oscillator and which is able to modify the phase of the latter in order to make it equal to the modulated wave, wherein the processing means makes it possible to produce an error signal comprising:

a first decision and regeneration circuit with an input connected to the first demodulator and an output supplying a difference signal (X−X), in which X is a signal regenerated from signal X;

a first zero threshold comparator with an input connected to the first modulator and an output supplying a signal determining the sign of X, i.e. sgn X;

a second zero threshold comparator connected to the output of the decision and regeneration circuit and determining the sign of the difference X−X, i.e. sgn (X−X);

a second decision and regeneration circuit with an input connected to the second democulator and an output supplying a difference signal (Y−Y), in which Y is a signal regenerated from signal Y;

a third zero threshold comparator with an input connected to the second demodulator and an output supplying a signal determining the sign of Y, i.e. sgn Y;

a fourth zero threshold comparator connected to the output of the second decision and regeneration circuit and determining the sign of the difference Y−Y, i.e. sgn (Y−Y);

a first logic EXCLUSIVE-OR gate with two inputs, one connected to the output of the third comparator and receiving sgn (X−X) and the other to the output of the second comparator and receiving sgn (Y), said first gate supplying to an output a signal sgn (X−X) sgn (Y);

a second EXCLUSIVE-OR gate with two inputs, one connected to the output of the fourth comparator and receiving sgn (Y−Y) and the other to the output of the second comparator and receiving sgn (X), said second gate supplying at an output a signal −sgn (Y−Y) sgn (X);

an adder with two inputs, the first connected to the output of the first gate and the second to the output of the second gate, said adder supplying at a gate a signal sgn (X−X) sgn (Y)−sgn (Y−Y) sgn (X), which constitutes the error signal $\epsilon(\phi)$, said output being connected to the control input of the voltage-sensitive oscillator.

4,484,338

DATA TRANSMISSION SYSTEMS

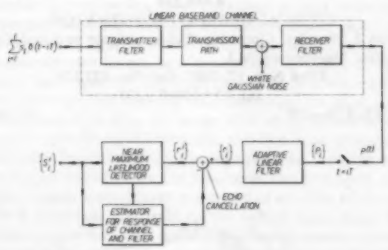
Adrian P. Clark, and Michael J. Fairfield, both of Loughborough, England, assignors to Plessey Overseas Limited, Ilford, England

Filed Oct. 26, 1981, Ser. No. 314,974

Claims priority, application United Kingdom, Oct. 28, 1980, 8034682

Int. Cl.³ H03D *1/00*

U.S. Cl. 375—94 **6 Claims**



1. A method of detecting a multi-level input signal using a Viterbi algorithm, in which the incoming signal has m levels, said method comprising the steps of sampling the incoming signal at regular predetermined intervals thereby to generate signal samples, expanding each signal sample of the received signal into nk expanded vectors where n is smaller than m, from the nk expanded vectors having a respective cost associated therewith, selecting k vectors with the smallest costs, storing said selected k vectors together with their associated costs, and calculating the most likely level of the received signal on the basis of said costs.

4,484,339

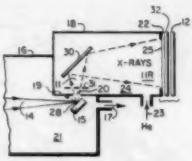
PROVIDING X-RAYS

Philip J. Mallozzi, Delaware, and Harold M. Epstein, Columbus, both of Ohio, assignors to Battelle Development Corporation, Columbus, Ohio

Continuation-in-part of Ser. No. 232,774, Feb. 9, 1981, abandoned. This application Jul. 9, 1982, Ser. No. 396,980

Int. Cl.³ **G01T** *1/36, 7/00;* **G01N** *23/20;* **H01J** *39/02*

U.S. Cl. 378—82 **35 Claims**



1. Apparatus for providing X-rays to an object in an ordinary environment such as air at approximately atmospheric pressure, comprising

means for directing energy onto a target to produce X-rays of a selected spectrum and intensity at the target,

a substantially fluid-tight first enclosure around the target,

means for reducing the quantity, and thus the pressure, of gas in the first enclosure to maintain the pressure therein substantially below atmospheric pressure,

a substantially fluid-tight second enclosure, adjacent to the first enclosure, containing a gas that is highly transparent to X-rays, to the substantial exclusion of other gases,

a wall in the first enclosure having therein an opening large enough to permit X-rays to pass through it and yet small enough that the pressure reducing means can evacuate gas from the first enclosure at least as fast as it enters through the opening at the desired pressure,

the target being located close enough to the opening and so positioned as to emit a substantial portion of the X-rays produced toward the opening, to pass through it,

a near wall in the second enclosure having therein a portion that is highly transparent to X-rays and positioned adjacent to the opening in the wall of the first enclosure, to permit the X-rays passing through the opening to travel on through the transparent portion of the near wall toward a far wall of the second enclosure located opposite the near wall, and

the far wall of the second enclosure, to which the X-rays travel, having a portion that is highly transparent to them, so that the object to which the X-rays are to be provided may be located outside the second enclosure and adjacent to the transparent portion of the far wall and thus receive the X-rays substantially unimpeded by air or other undesired intervening matter.

4,484,340

MULTICHANNEL CURRENT MEASURING APPARATUS FOR X-RAY COMPUTERIZED TOMOGRAPH

Keiki Yamaguchi; Tadashi Ogawa, and Hideaki Uno, all of Tokyo, Japan, assignors to Yokogawa Hokushin Electric Corporation, Tokyo, Japan

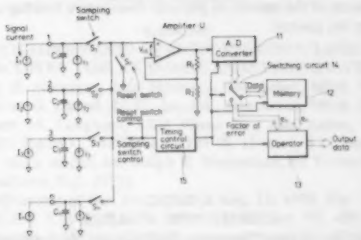
Filed Nov. 24, 1982, Ser. No. 444,329

Claims priority, application Japan, Dec. 9, 1981, 56-197912; Dec. 10, 1981, 56-183783; Jul. 27, 1982, 57-130742

Int. Cl.³ **A61B** *6/02*

U.S. Cl. 378—019 **6 Claims**

1. A multichannel current measuring apparatus used in an X-ray computerized tomograph, for measuring the strength of an input signal current by charging a capacitor provided in each channel with a multichannel input signal current supplied by an X-ray detector and by reading out the corresponding voltage of the charged capacitor; said apparatus comprising in each channel, a capacitor, and a sampling switch; an amplifier having an input means and an output means; said sampling switch of each channel being connected between said input means of said amplifier and an associated capacitor in each channel; a reset switch connected to said input means of said amplifier; an analog-to-digital converter having input means and output means, said input means of said converter being connected to said output means of said amplifier; a memory for storing signals; an operating means for performing operations on signals received thereby, switch means for selectively supplying digital signals from said converter to said memory and to said operating means; and control means for controlling selected switching of said sampling switches, said reset switch and for controlling operation of said converter, said switching means, said memory and said operating means; whereby each of said capacitors is first cleared by concurrent switching ON and OFF of said plurality of sampling switches and said reset



switch, and thereafter applying said input signals to said capacitors, and then subsequently sequentially turning ON and OFF of said sampling switches, to thereby supply combined signals representing said input signals and error factors to said amplifier for amplification, and then to said converter for conversion to digital form, and then to said memory for storage; and thereafter again clearing said capacitors of each channel by turning ON and OFF said plurality of sampling switches and said reset switch; and thereafter sequentially turning ON and OFF said sampling switches, thereby to supply signals from each capacitor representing error factors to said amplifier for amplification, and then to said converter for conversion to digital form, and switched by said switching means to said operating means; said operating means retrieving stored combined signals from said memory and subtracting therefrom said error factor signals, thereby to produce an output signal representative of substantially true input signals.

4,484,341

METHOD AND APPARATUS FOR SELECTIVELY RADIATING MATERIALS WITH ELECTRONS AND X-RAYS

Robert Luniewski, Smithtown, N.Y., assignor to Radiation Dynamics, Inc., Melville, N.Y.

Filed Oct. 2, 1981, Ser. No. 308,015

Int. Cl.³ **G21K** *5/00*

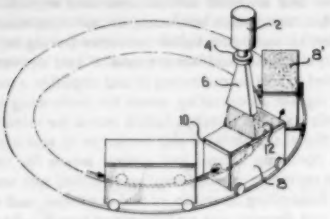
U.S. Cl. 378—69 **5 Claims**

1. The method of selectively irradiating material with X-rays or electrons comprising the steps of:

moving a plurality of material containing open receptables under a beam of electrons sequentially and successively over a closed path,

placing a cover having a covering of high Z material which generates X-rays when struck by electrons, over the opening of only those receptacles containing material to be irradiated by X-rays,

repetitively passing the covered receptacles under the beams, and



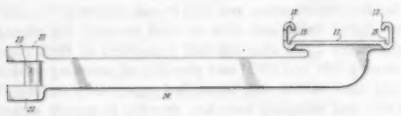
controlling the time interval between passages under the beam of the covers to prevent destructive buildup of heat in the covers.

4,484,342

ENDODONTIC HOLDER

Kenneth L. Allison, Claremont; Helio Gomez, So. Pasadena, and Robert Manchego, Azusa, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 14, 1983, Ser. No. 465,988
Int. Cl.³ G03B *41/16*
U.S. Cl. 378—168 **4 Claims**



1. Endodontic holder means for holding two rigid bitewing x-ray photoreceptor cassettes, each cassette enclosed in a plastic bag, comrising a single unit of plastic formed into a handle, a first cassette holder comprising a first rigid backing plate and two gripping members formed at one end of said handle portion, and a second cassette holder comprising a second rigid backing plate and a gripping member formed at the other end of said handle,

a gripping member attached to each end of said first backing plate and positioned to grip one edge of the cassette to hold the cassette flat against the first backing plate, said first backing plate having its plane in line with the length of the cassette,

said gripping members being slightly flexible and having surfaces opposite said first backing plate sloping toward said first backing plate so that a cassette edge pressed against said sloping surfaces will snap into contact with said first backing plate with the length of the backing plate in parallel with the plane of the cassette without testing said plastic bag,

said second backing plate formed at the other end of said handle portion with its plane parallel to the length of said handle portion, and

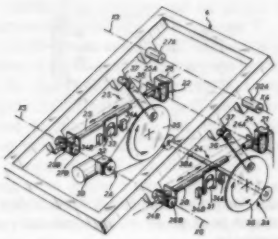
said gripping member being slightly flexible and having a flat surface parallel to said second backing plate so that a cassette edge pressed into the space between said second backing plate and said gripping member will be held firmly.

4,484,343

TILTING TABLE X-RAY APPARATUS

Jean César, Nîmes, France, assignor to National Equipment RX, Vitry-sur-Seine, France

Filed Mar. 8, 1982, Ser. No. 355,611
Claims priority, application France, Mar. 17, 1981, 81 05275
Int. Cl.³ G03B *41/16*
U.S. Cl. 378—196 **6 Claims**



1. A remote-control tilting table x-ray apparatus which comprises:

(a) a stand including two verticle blocks of substantially equal height which extend parallel to one another;

(b) a frame movably mounted on said stand, said frame including two pairs of horizontal trunnions having axes which coincide with first and second tilt axes of said frame, said vertical blocks having upper edges with two pairs of retainer housings formed therein, said retainer housings comprising means for accommodating respective trunnions, said frame further comprising three-position sliding locking rods for selectively locking said trunnion pairs within respective pairs of retainer housings, said frame further comprising means for simultaneously actuating said locking rods;

(c) a patient-supporting table carried by said frame;

(d) an x-ray examining assembly comprising an x-ray source and a support therefor disposed above said table;

(e) a film-holder selector disposed below said table;

(f) first and second tilt axes for said frame, said first and second tilt axes being disposed parallel to and along each side of a transverse axis of symmetry of said frame;

(g) means for tilting said frame with respect to said stand in either direction about either of said tilt axes;

(h) a carriage for supporting said x-ray source and support, said carriage being movably mounted along a guide member which extends longitudinally and outwardly of said frame;

(i) ancillary imaging means being associated with said film-holder selector, said ancillary imaging means being connected to said frame and projecting below said film-holder projector and away from said x-ray source;

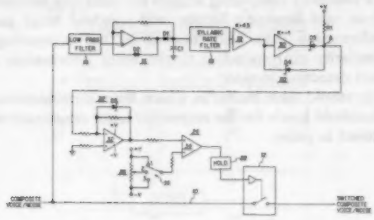
(j) means for guiding said film-holder selector and said ancillary imaging means longitudinally with respect to said frame, said ancillary imaging means being slidably mounted on said guiding means such that said ancillary imaging means can be displaced along the entire length of said table; and

(k) an eccentrically rotatable actuating disk disposed between two prongs of a fork which is fixed to and which extends transversely from each of said locking rods, wherein said means for simultaneously actuating said locking rods ensures identical movement of said locking rods among their three positions for identical movement of said actuating disks.

4,484,344
VOICE OPERATED SWITCH

Don L. Mai, Garland, and Bruce W. Campbell, Richardson, both of Tex., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 1, 1982, Ser. No. 353,670
Int. Cl.³ G10L 1/00
U.S. Cl. 381—46 8 Claims



1. A circuit for detecting the presence of voice energy in a composite voice and noise signal, comprising:

means for separating the voice signals from the noise signals to produce an indication of the presence of said voice signals, including:

means for producing an envelope waveform of the composite voice and noise signal

a syllabic rate filter for extracting the syllabic rate content of the voice signal from said envelope waveform, and

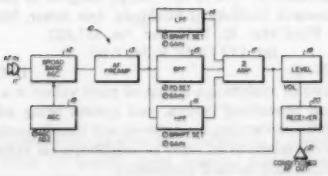
means, including an amplifier, for amplifying only acceptable syllabic rate content exceeding an offset threshold and thereby discriminating against unacceptable syllabic rate components, said amplifier having the majority of the circuit gain such that the output thereof is driven to one state during the presence of said acceptable syllabic rate content, and said output is driven to another state during the absence of said acceptable syllabic rate content;

whereby said one state is representative of the presence of voice signals and said other state is representative of the absence of voice signals.

4,484,345
PROSTHETIC DEVICE FOR OPTIMIZING SPEECH UNDERSTANDING THROUGH ADJUSTABLE FREQUENCY SPECTRUM RESPONSES

William P. Stearns, P.O. Box 398, Scottsdale, Ariz. 85252

Filed Feb. 28, 1983, Ser. No. 470,093
Int. Cl.³ H03G 5/00; H04R 25/00
U.S. Cl. 381—98 2 Claims



2. Prosthetic appratus for providing compensatory amplification for aurally handicapped persons comprising:

a multi-channel filter network,

each filter of said network having a frequency response and acoustical gain which can be independently adjustably varied to provide a corrective hearing response based upon threshhold otograms,

said multi-channel filter network comprising a three-channel filter assembly connected in a parallel arrangement, and

said three-channel filter assembly comprising a first filter having a variable response at the low end of an audio speech band, a second filter having a variable response at the middle of the audio speech band, and a third filter having a variable response at the high end of the audio speech band,

said first filter comprising means for adjustably controlling its gain and for adjustably setting its break frequency over a frequency range of approximately 0.8 kHz to 2.8 kHz to control the first filter's lowpass frequency response,

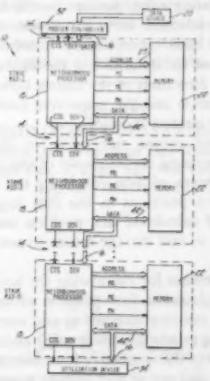
said second filter having a channel gain, "Q", and center frequency which is individually adjustable to control amplitude of signals passed, and the bandwidth and center frequency of the second filter's response,

said third filter having a break frequency of approximately 1.4 kHz to 4.4 kHz and means for adjustably controlling this break frequency and its gain to control said third filter's highpass frequency responses.

4,484,346
NEIGHBORHOOD TRANSFORMATION LOGIC CIRCUITRY FOR AN IMAGE ANALYZER SYSTEM

Stanley R. Sternberg, 1606 Hillridge, Ann Arbor, Mich. 48103; William O. Dargel, 90 W. Joy Rd., Ann Arbor, Mich. 48105; Robert M. Lougheed, 1206 Wines Dr., Ann Arbor, Mich. 48103; David L. McCubbrey, 125 W. Hoover, #12, Ann Arbor, Mich. 48103, and Ralph E. Richardson, 87 Victoria Dr., Eatontown, N.J. 07724

Continuation of Ser. No. 178,312, Aug. 15, 1980, Pat. No. 4,395,698. This application Apr. 28, 1983, Ser. No. 489,669
The portion of the term of this patent subsequent to Jul. 26, 2000, has been disclaimed.
Int. Cl.³ G06K 9/00; G06F 15/20
U.S. Cl. 382—27 15 Claims



1. In an image analyzer system having at least one substantially identical neighborhood transformation stage including a plurality of neighborhood window storage registers for temporarily accessing substantially all of the neighborhoods of pixel values in the image, and a programmable controller communicating with the stage wherein the improvement comprises a neighborhood transformation stage which can provide a wide variety of image analyses, said stage including:

logic means having at least two inputs and an output, operative to provide at its output the sum of two values applied to its inputs;

means for connecting said neighborhood window registers to one input of said logic means;

means coupled to the programmable controller for applying a programmable contribution value to the other input of said logic means;

detector means for detecting preselected output values from said logic means; and

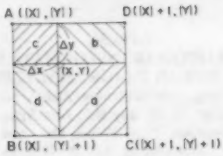
maximum value detection means coupled to said logic means output for detecting the maximum value generated at said logic means output for the pixel values contained in said neighborhood window registers.

4,484,347

METHOD OF IMAGE TRANSFORMATION IN A DISPLAY DEVICE

Seiji Kashioka, Hachioji, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 16, 1982, Ser. No. 348,668
Claims priority, application Japan, Feb. 23, 1981, 56-24289
Int. Cl.³ G06K 9/44, 9/36; H04N 1/40
U.S. Cl. 382—47 **17 Claims**



12. An apparatus for transforming a first image into a second image having a different scale, location or orientation to obtain an intensity distribution in the second image according to the intensities at discrete positions of the first image, comprising:

storage means for storing said first image in the form of a column and row matrix of data values indicating the intensities at said discrete positions of said first image;

means for calculating a first position in said first image from an arbitrarily-selected second position in said second image on the basis of a selected transformation factor, including means for determining the distances along column and row directions of the matrix between the calculated first position and the respective four discrete positions mutually nearest thereto;

address generator means responsive to said calculating means for generating the addresses of storage locations in said storage means of data values for the four mutually-nearest discrete positions in the first image which are nearest to said calculated first position and for applying said addresses to said storage means to read out said data values; and

level calculator means for calculating the level of the intensity at said calculated first position of said first image including first means connected to said storage means and said calculating means for determining an intensity weight factor for each of the respective four discrete positions for which data is read out of said storage means based on the intensity at a respective discrete position and the two distances along column and row directions of the matrix between the calculated first position and the one of the four discrete positions diagonally-opposing the respective discrete position and on the basis of the intensity distribution of the four discrete positions, and second means for adding the intensity weight factors determined by said first means.

4,484,348

FIGURE RECOGNIZING SYSTEM

Masaaki Shizuno, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 18, 1981, Ser. No. 332,297
Claims priority, application Japan, Dec. 22, 1980, 55-181612
Int. Cl.³ G06K 9/68
U.S. Cl. 382—48 **3 Claims**

1. A figure recognizing system comprising:

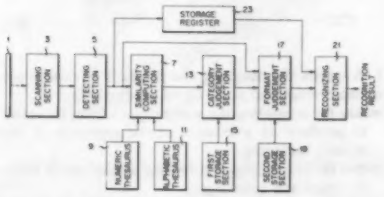
(a) a scanning section for reading out letter information of various letter species recorded on a recording medium;

(b) a detecting section connected to said scanning section for effecting letter detection from the letter information from said scanning section;

(c) thesauruses consisting of standard letter patterns of various letter species corresponding to said various letter species;

(d) a similarity computing section for receiving information from said detecting section and standard letter pattern information from said thesauruses and computing the similarity corresponding to the letter information from said detecting section;

(e) threshold table means in which letter combinations and threshold levels for the respective letter combinations are stored as pairs;



(f) a category judgement section for receiving the output of said similarity computing section, obtaining a similarity difference from the maximum and next maximum values of said similarity and comparing said similarity difference and a corresponding threshold level of said threshold table means to judge the category of said letter;

(g) format table means where a predetermined category series is stored;

(h) format judging means connected to said detecting section and category judgement section for comparing a category supplied from said detecting section and a category series supplied from said detecting section;

(i) storage means for storing the detected information from said detecting section; and

(j) a recognizing section connected to said format judging section and storage means for recognizing the content of said storage means to provide final letter information if a coincidence is obtained as a result of judgement in said format judging section.

4,484,349

PARALLEL PIPELINE IMAGE PROCESSOR

David L. McCubbrey, Ann Arbor, Mich., assignor to Environmental Research Institute of Michigan, Ann Arbor, Mich.

Filed Mar. 11, 1982, Ser. No. 357,022
Int. Cl.³ G06K 9/54, 9/60
U.S. Cl. 382—49 **10 Claims**

1. A method of analyzing a matrix of pixel values in a serial neighborhood processing system, said system being adapted for sequentially performing a neighborhood transformation on pixel values contained in an array of neighborhood extraction storage devices, said method comprising:

partitioning the matrix into a plurality of segments;

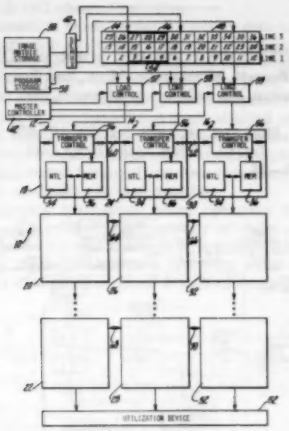
feeding contiguous segments to adjacent neighborhood transformation stages in a raster scan line format;

sensing the relative position of each pixel in the lines fed to each stage;

bi-directionally transferring pixels lying on the edges of each segment to adjacent stages over a single connection means before said pixels are loaded into the neighborhood extraction devices for processing; and

then, loading neighboring pixel values into said neighborhood extraction devices for processing whereby each

stage contains all of the neighboring pixels for performing said neighborhood transformations on the pixels fed to the



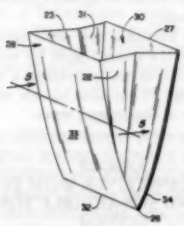
stage even though some of the neighboring pixels were initially fed to adjacent stages.

4,484,350

CONVERTIBLE PAPER BAG AND DOILY

Kenneth N. Gordon, 403 N. Columbia Ave., Columbus, Ohio 43209

Filed Aug. 26, 1983, Ser. No. 526,691
Int. Cl.³ B65D 30/10
U.S. Cl. 383—4 3 Claims



1. A convertible, glueless bag comprising a generally rectangular blank of flexible sheet material folded longitudinally upon itself to define an elongated, rectangular open-ended tube made up of an outer panel, an inner panel and pleated side walls joining said inner and outer panels, one of the panels of said tube including relatively interleaved free edge portions of said blank; said tube being folded transversely upon itself to form a generally rectangular, open mouth bag having a closed bottom, pleated sides, front wall, a multiple ply rear wall and a multiple ply locking section tucked within the open mouth of the bag and overlying at least the rear wall of said bag; said bag being unfoldable without tearing to provide a substantially flat, generally rectangular doily-forming sheet.

4,484,351

NON-GLASS CHEMICAL CONTAINER

Marc de Leeuwe, Aptos, Calif., and Jeffrey S. Beitel, Cheshire, Conn., assignors to Union Carbide Corporation, Danbury, Conn.

Filed May 23, 1983, Ser. No. 497,229
Int. Cl.³ B65D 33/10
U.S. Cl. 383—9 9 Claims

1. A chemical container, for storing, transport and use in industrial applications, which employ liquid chemicals such as photoresist used in electronic circuit processing, comprising:

a pair of flat, opposed, closely adjacent matching plastic sheets sealed together at their edges except at a relatively small axially central position to form a rim member surrounding a receptacle enclosed by the opposed sheets, said receptacle having an aperture where the sheets are not sealed together;

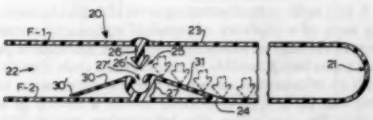
a rigid parallelepiped shaped sealing assembly having the plan of its major axes parallel to said sheets located in said aperture in contact with said opposed sheets and sealed thereto, said assembly having a central opening to permit filling and emptying of said receptacle.

4,484,352

RECLOSABLE PLASTIC BAG

Lawrence F. Katzin, 324 Westridge Dr., Raleigh, N.C. 27609

Filed Feb. 7, 1983, Ser. No. 464,322
Int. Cl.³ B65D 33/24
U.S. Cl. 383—65 16 Claims



1. In a reclosable, flexible container of the type comprising:

(a) a plastic film bag having flexible first and second opposing walls and an opening therein;

(b) interlocking and cooperative male and female elements formed of a resilient material integrally at the inner surface of said walls about the opening of said bag, said male element being formed at said first wall and having locking surfaces thereon and said female element being formed at said second wall and having locking surfaces leading from an outer mouth portion thereof for engaging said male element locking surfaces and closing said bag thereby; and

(c) external flanges formed on the upper exposed edges of said walls and extending outwardly of said elements and adapted to be gripped and drawn apart to separate said elements with said bag being opened by drawing said elements apart and being closed by pressing said elements together;

the improvement comprising:

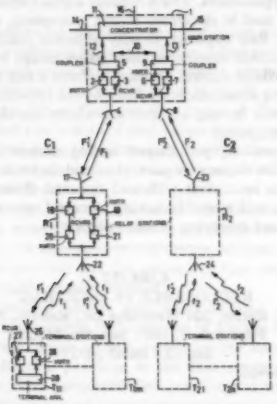
(d) first and second ramp structures formed integrally with said second wall of said bag adjacent said female element, said ramp structures extending laterally from opposite sides of the outer mouth portion of said female element to the inner surface of said second wall and providing planar surfaces on both sides of said female element upon which the leading part of said male element can slide towards and so as to locate at least a portion thereof over a portion of the mouth of said female element to be interlocked therewith enabling subsequent interlocking of the remaining portions of said elements by continuous pressure applied thereto to close said bag.

4,484,353

METHOD FOR CONTROLLING THE INFORMATION STREAM IN A CELL CONSTITUTING SEVERAL RADIO CHANNELS AND A DEVICE FOR CARRYING OUT THIS METHOD

Patrick Flottes, Verrieres le Buisson, and Daniel Leclerc, Clamart, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 18, 1982, Ser. No. 442,546
Claims priority, application France, Nov. 20, 1981, 81 21777
Int. Cl.³ H04B *1/00, 7/14*
U.S. Cl. 455—33 **7 Claims**



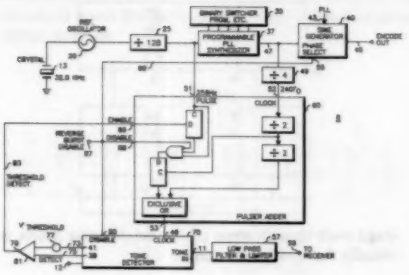
7. In a radio cell constituting several radio channels connecting each of a plurality of terminal stations to a main station thereof through an ascendent path and a descendent path, these two paths being capable of transmitting code signals together with an information stream, while the information to be handled can have several priority levels, a device in said main station for controlling the information stream, said device granting authorization to use the ascendent path of each radio channel to a terminal station among several of said terminal stations that request this authorization, characterized in that said device comprises a microprocessor which, under the control of a detector which detects the absence of a code signal S_4 in the ascendent path which code signal S_4 indicates said ascendent path being in use controls a code signal generator for transmission, through the descendent path, of a code signal S_0, indicating that said ascendent path is not in use, said microprocessor then analyzing, during call time windows, the received signals carried along through the ascendent path by comparing these signals with predetermined call messages, and finally controlling the code signal generator for transmitting, through the descendent path, one of a plurality of code signals S_1, S_2 or S_3 according to the result of the comparison, or for transmitting the code signal S_0 wherein when several calls are received simultaneously, the code signal S_1 is transmitted for preventing a terminal station from transmitting a lower priority call, the code signal S_2 is transmitted if, subsequent to the code signal S_1, there is an absence of a call request, and the code signal S_3 is transmitted to authorize the use of said ascendent path.

4,484,354

CONTINUOUS TONE DECODER/ENCODER

Robert M. Bennett, Minneapolis, Minn., and Ronald H. Chapman, Wheaton, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 16, 1980, Ser. No. 197,408
Int. Cl.³ H04B *1/48;* H04Q *1/45*
U.S. Cl. 455—35 **7 Claims**



1. An improved combined encoder/decoder circuit for use in a continuous tone encoded squelch two-way radio system, and operable in an encoder mode to provide encoded tone output signals of a pre-determined frequency and in a decoder mode to provide a detect signal in response to an encoded signal applied to an input having said pre-determined frequency, comprising:

(a) a reference oscillator, for generating a stable reference frequency at an output;

(b) a frequency synthesizer coupled to the reference oscillator output for generating an encoded signal of pre-determined frequency;

(c) sine generating mens, coupled to the frequency synthesizer and, having first and second control inputs, for generating a sine wave encoded tone from the signal generated by the frequency synthesizer and phase shifting said encoded tone in response to signals applied to the first said second control input;

(d) decoder means having a first input coupled to the frequency synthesizer, a second input for receiving encoded signals and an output for providing a detect signal in response to receipt of encoded signals of said pre-determined frequency at the second input.

4,484,355

HANDHELD TRANSCEIVER WITH FREQUENCY SYNTHESIZER AND SUB-AUDIBLE TONE SQUELCH SYSTEM

Steven P. Henke, and Robert N. Fields, both of Indianapolis, Ind., assignors to Ritron, Inc., Carmel, Ind.

Filed Apr. 11, 1983, Ser. No. 484,045
Int. Cl.³ H04B *1/40*
U.S. Cl. 455—76 **24 Claims**

1. A control circuit for a radio transceiver for selectively transmitting and receiving radio communications, said circuit comprising:

channel selection means for selecting one of a set of communication channels;

mode control means for selecting the mode of operation of said transceiver between transmission mode and reception mode;

a frequency synthesizer;

a sub-audio encoder/decoder;

memory means for storing frequency data corresponding to each of said communication channels, said frequency data for each said channel including:

a transmission mode carrier frequency data word,

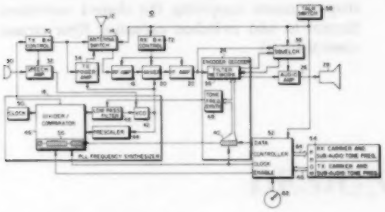
a transmission mode tone frequency data word,

a reception mode carrier frequency data word, and

a reception mode tone frequency data word;

controller means for supplying stored frequency data corresponding to the channel and mode selected on said transceiver, said controller means including means for supplying carrier frequency data words to said frequency synthesizer and means for supplying tone frequency data words to said sub-audio encoder/decoder;

said frequency synthesizer being operative in reception mode to determine the frequency of radio communications to which said transceiver is tuned, the tuned frequency corresponding to a reception mode carrier frequency data word received from said controller means;



said frequency synthesizer being operative in transmission mode to determine the transmission frequency of radio communications transmitted by said transceiver, the transmission frequency corresponding to a transmission mode carrier frequency data word received from said controller means;

said sub-audio encoder/decoder being operative in reception mode to detect a sub-audio frequency signal on radio communications received by said transceiver, said detected sub-audio frequency being of a given frequency corresponding to a reception mode tone frequency data word received from said controller means, and to enable audio reception by said transceiver upon such detection; and

said sub-audio encoder/decoder being operative in transmission mode to generate a sub-audio frequency signal corresponding to a transmission mode tone frequency data word received from said controller means, and to apply the generated sub-audio frequency signal to radio communications transmitted by said transceiver.

4,484,356

APPARATUS AND METHOD FOR ACQUIRING AND PROCESSING RADIO SIGNALS RECEIVED AT DIFFERENT FREQUENCIES

Michel Geesen, Antony; Jacques Mourant, Maurepas, and Daniel P. Ludwig, Ramonville-Saint-Agne, all of France, assignors to Electronique Marcel Dassault and Centre National d'Etudes Spatiales, both of Paris, France

Continuation-in-part of Ser. No. 038,748, May 14, 1979, abandoned, and a continuation-in-part of Ser. No. 166,621, Jul. 7, 1980, Pat. No. 4,398,286, which is a continuation-in-part of Ser. No. 038,770, May 14, 1979, abandoned. This application Nov. 5, 1981, Ser. No. 318,547

Claims priority, application France, May 16, 1978, 78 14339; May 17, 1978, 78 14626

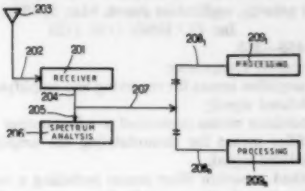
Int. Cl.³ H04B *1/26, 17/00;* H03L *7/18*

U.S. Cl. 455—165 **12 Claims**

10. A method for determining the frequency range containing a received radio frequency signal lying within a predetermined frequency band comprising:

generating a frequency scanning local signal with a frequency synthesizer having a digital frequency control input by applying a cycle of digital signals which change in steps on said control input, said local signal frequency cyclically varying over a frequency range related to said radio frequency signal, said local signal frequency variations being delayed with respect to changes in said digital signal a time which approaches the time each digital signal dwells on said control input;

heterodyning said radio signal with said scanning local signal;



selecting at least one bandwidth for passing a heterodyned radio signal in response to a bandwidth selection signal;

monitoring the level of said heterodyned signal within said selected bandwidth; and

generating a frequency range signal identifying a range in which said radio frequency lies in response to said monitored signal level, said frequency bandwidth selection signal and the digital signal controlling said frequency synthesizer.

4,484,357

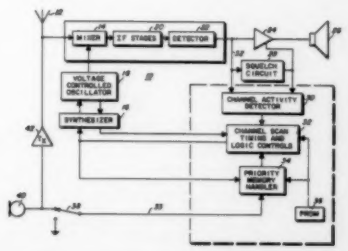
SPONTANEOUS CHANNEL CONTINUITY SCANNING RADIO

Chris S. Fedde, Palatine, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 10, 1982, Ser. No. 356,876

Int. Cl.³ H03J *7/18*

U.S. Cl. 455—166 **7 Claims**



1. A scanning radio receiver for receiving signals on a predetermined number of channels, said receiver having scanning circuitry for sequentially selecting individual ones of said predetermined channels including priority channel monitoring circuitry, comprising:

switch means, for generating a control signal in response to activation of said switch means;

priority memory means, coupled to the scanning circuitry, for storing priority channel designations;

priority modification means, coupled to the switch means, for modifying the priority memory means in response to the control signal, including timing means, for generating a timing control signal a period of time after the priority memory means is modified, and further including restoration means, for at least partially restoring the priority

memory means to its condition before modification in response to the timing means control signal, such that the channel selected by the scanning circuitry at the moment the control signal is generated is scanned as a priority channel, for a temporary time period.

4,484,358

RECEIVER HAVING SWITCHED CAPACITOR FILTER

Koji Iwahashi, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Japan

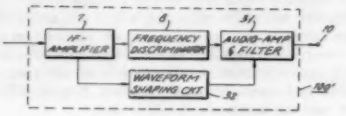
Filed Mar. 7, 1983, Ser. No. 473,112
Claims priority, application Japan, Mar. 5, 1982, 57-34601
Int. Cl.³ H04B 1/10, 1/26
U.S. Cl. 455—213 **7 Claims**

1. A receiver comprising:

a first amplifier means for receiving and amplifying an angle modulated signal;

a demodulator means connected to a first output of said first amplifier means for demodulating the amplified angle-modulated signal;

a switched capacitor filter means including a switched capacitor for selecting an audio frequency signal out of the output of said demodulator means and amplifying said audio frequency signal, said switched capacitor filter means having a pass band which is dependent on the frequency of a control signal for switching said switched capacitor; and



a waveform shaping means for shaping the waveform of a second output of said first amplifier means when the waveform level of the second output of said first amplifier means is above a predetermined level, said waveform shaping means supplying the shaped waveform output thereof to said switched capacitor filter means as said control signal.

DESIGN PATENTS

GRANTED NOV. 20, 1984

ERRATA

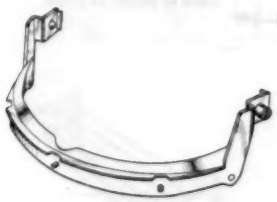
For CLASS	See PATENT NO.
D06–468	276,429

DESIGNS

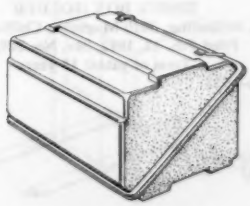
NOVEMBER 20, 1984

276,379
BIFURCATED HOODED JACKET
Rex F. Duval, Los Angeles, Calif., assignor to Alan Baum, Los Angeles, Calif., a part interest
Filed Jun. 7, 1982, Ser. No. 385,469
Term of patent 14 years
U.S. Cl. D2—29

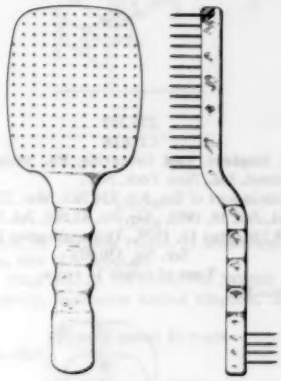
276,380
VISOR FRAME FOR A PROTECTIVE HELMET
Göran Hellberg, Varberg, Sweden, assignor to Hellberg Protection Aktiebolag, Lerum, Sweden
Filed Jul. 16, 1981, Ser. No. 284,014
Claims priority, application Sweden, Feb. 17, 1981, 81-0401
Term of patent 14 years
U.S. Cl. D2—233



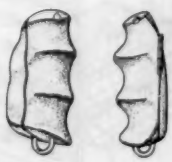
276,381
COMBINED CASE AND RACK FOR A CIRCUIT BOARD OR THE LIKE
Joseph J. Nagle, Rochester, and Joseph Vitko, Jr., Dover, both of N.H., assignors to Jotko Enterprises, Inc., Dover, N.H.
Filed Oct. 22, 1981, Ser. No. 313,825
Term of patent 14 years
U.S. Cl. D3—30.1



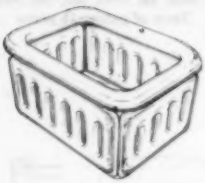
276,382
BRUSH
Connie B. Dalrymple, Rte. #1, Box 31, Holiday Park, Dunn, N.C. 28334
Filed Mar. 10, 1982, Ser. No. 356,837
Term of patent 14 years
U.S. Cl. D4—119



276,383
COMBINED KEY HOLDER AND DEFENSIVE WEAPON
John C. Hopkins, Rte. 1, Box 27, McGaheysville, Va. 22840
Filed Jul. 15, 1982, Ser. No. 398,607
Term of patent 14 years
U.S. Cl. D3—62



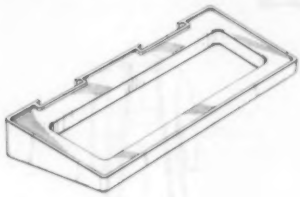
276,384
INFLATABLE BABY BED
Frederick H. Kroll, 72 Wood Hollow La., New Rochelle, N.Y. 10804
Filed Sep. 20, 1982, Ser. No. 420,103
Term of patent 14 years
U.S. Cl. D6—390



276,385
CHAIR
William I. Stephens, East Greenville, Pa., assignor to Knoll International, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 134,763, Mar. 23, 1980, , Ser. No. 108,961, Jan. 18, 1980, , Ser. No. 62,006, Jul. 30, 1979, , and Ser. No. 38,124, May 11, 1979,. This application Dec. 15, 1981, Ser. No. 330,952
Term of patent 14 years
U.S. Cl. D6—366

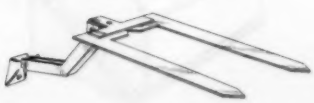
276,386
LOFT BED
Earnest D. Shaw, High Point, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.
Filed Apr. 30, 1982, Ser. No. 373,739
Term of patent 14 years
U.S. Cl. D6—384

276,387
TOWEL RACK OR THE LIKE
Rino Conti, Stoughton, Mass., assignor to Dart Industries Inc., Northbrook, Ill.
Filed Aug. 10, 1982, Ser. No. 406,843
Term of patent 14 years
U.S. Cl. D6—549

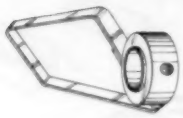


276,388
TOWEL RACK
Charles D. Miller, and William C. McKeone, both of Kansas City, Mo., assignors to Broadway Industries, Inc., Kansas City, Mo.
Filed Sep. 1, 1982, Ser. No. 413,734
Term of patent 14 years
U.S. Cl. D6—548

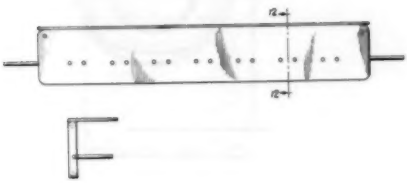
276,389
TISSUE BOX HOLDER
Leonard H. Fellhoelter, 3010 Magnolia, Chillicothe, Mo. 64601
Filed Feb. 12, 1982, Ser. No. 348,582
Term of patent 14 years
U.S. Cl. D6—552



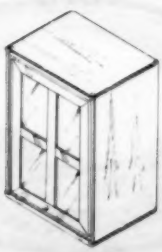
276,390
DISPLAY RACK
Svante Karlsson, Halmstad, Sweden, assignor to Pido Inredningar Handelsbolac Matty Och Svante Karlsson, Sweden
Filed Jul. 27, 1982, Ser. No. 402,286
Term of patent 14 years
U.S. Cl. D6—553



276,391
NECKTIE RACK
Mary A. Ringler, Rte. 5, 811 Lake Dr., Ashland, Ohio 44805
Filed Sep. 23, 1982, Ser. No. 422,483
Term of patent 14 years
U.S. Cl. D6—320



276,392
WALL MOUNTED CABINET
James J. Palka, Arlington Heights, Ill., assignor to Pace Industries Inc., Chicago, Ill.
Filed Apr. 22, 1982, Ser. No. 370,951
Term of patent 14 years
U.S. Cl. D6—561



276,393
DESK
John W. Foyle, St. Nicholas House, 55 Stambridge Rd., Rochford, Essex SS4 1DY, United Kingdom
Filed Sep. 25, 1981, Ser. No. 305,503
Claims priority, application United Kingdom, Jan. 1, 1981, 819738
Term of patent 14 years
U.S. Cl. D6—483

276,394
DESK
John W. Foyle, St. Nicholas House, 55 Stambridge Rd., Rochford, Essex SS4 1DY, England
Filed Sep. 25, 1981, Ser. No. 305,505
Claims priority, application United Kingdom, Apr. 7, 1981, 999831
Term of patent 14 years
U.S. Cl. D6—483

276,395
AUTOMATIC LOZENGE BOX DISPENSER
Urban Andersson, Ljungbro, Sweden, assignor to AB Cloetta, Sweden
Filed Mar. 25, 1982, Ser. No. 361,774
Claims priority, application Sweden, Sep. 29, 1981, 81-2126
Term of patent 14 years
U.S. Cl. D6—462

276,396

FURNITURE BASE OR SIMILAR ARTICLE

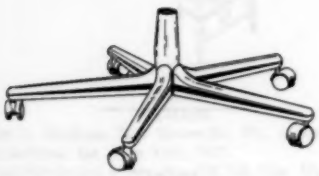
Hermann Locher, Dornach, Switzerland, assignor to Giroflex Entwicklungs AG, Koblenz, Switzerland

Filed Dec. 7, 1981, Ser. No. 328,452

Claims priority, application Switzerland, Aug. 3, 1981, 000/900

Term of patent 14 years

U.S. Cl. D6—498



276,397

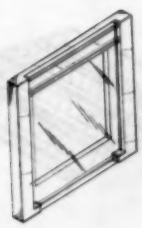
PICTURE FRAME

John G. Pfanstiehl, Rte. 87, Andover, Conn. 06232

Continuation-in-part of Ser. No. 121,992, Feb. 19, 1980, Pat. No. Des. 226,890. This application Mar. 11, 1982, Ser. No. 357,173

Term of patent 14 years

U.S. Cl. D6—300



276,398

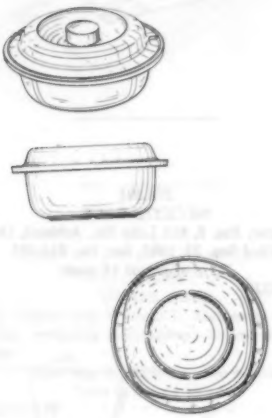
COVERED CASSEROLE DISH OR THE LIKE

Rino Conti, Stoughton, Mass.; Robert H. C. M. Daenen, Hekelgem, Belgium; Gerald M. Grusin, Chicago, Ill.; Augusto A. Picozza, Johnston, R.I., and James B. Swett, Altamonte Springs, Fla., assignors to Dart Industries Inc., Northbrook, Ill.

Filed Jun. 7, 1982, Ser. No. 385,973

Term of patent 14 years

U.S. Cl. D7—16



276,399

UPPER SURFACE DECORATION FOR A PLATE OR SIMILAR ARTICLE

Steve A. Unger, Manlius, N.Y., assignor to Syracuse China Corporation, Syracuse, N.Y.

Filed Dec. 30, 1981, Ser. No. 335,816

Term of patent 14 years

U.S. Cl. D7—39

276,400

FOOD STORAGE CONTAINER OR THE LIKE

Robert H. C. M. Daenen, Hekelgem, Belgium, and Rino Conti, Stoughton, Mass., assignors to Dart Industries Inc., Northbrook, Ill.

Filed Mar. 9, 1982, Ser. No. 356,600
Term of patent 14 years
U.S. Cl. D7—79

276,401

FOOD STORAGE CONTAINER OR THE LIKE

Robert H. C. M. Daenen, Hekelgem, Belgium, and Rino Conti, Stoughton, Mass., assignors to Dart Industries Inc., Northbrook, Ill.

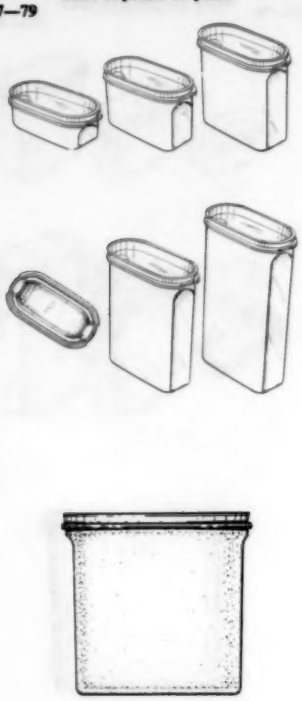
Filed Mar. 9, 1982, Ser. No. 356,599
Term of patent 14 years
U.S. Cl. D7—79

276,402

FOOD STORAGE CONTAINER OR THE LIKE

Robert H. C. M. Daenen, Hekelgem, Belgium, and Rino Conti, Stoughton, Mass., assignors to Dart Industries Inc., Northbrook, Ill.

Filed Mar. 9, 1982, Ser. No. 356,602
Term of patent 14 years
U.S. Cl. D7—79



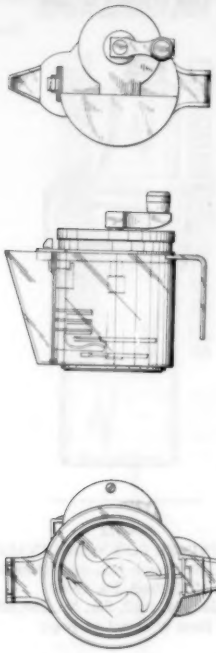
276,403

PAN

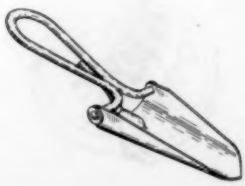
Morikiyo Ejiri, Seto, Japan, assignor to Ejiri Co. Ltd., Aichi, Japan

Filed Jun. 11, 1982, Ser. No. 387,573
Term of patent 14 years
U.S. Cl. D7—360

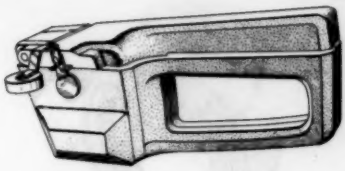
276,404
MIXER
John S. Doyel, 404 W. 20th St., New York, N.Y. 10016
Filed May 3, 1982, Ser. No. 374,193
Term of patent 14 years
U.S. Cl. D7—380



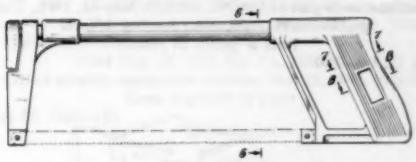
276,405
FOLDABLE DIGGING TOOL
Milan D. Jackson, Oregon City, Oreg., assignor to U-Dig-It Enterprises, Inc., Boring, Oreg.
Filed Nov. 22, 1982, Ser. No. 443,437
Term of patent 14 years
U.S. Cl. D8—10



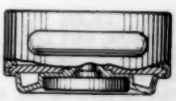
276,406
HAND HELD CAN OPENER
Marshall B. Johnson; Joseph F. Moore, and Robert S. Myerly, all of Chillicothe, Ohio, assignors to Wear-Ever Aluminum, Inc., Chillicothe, Ohio
Filed Jul. 6, 1982, Ser. No. 395,582
Term of patent 14 years
U.S. Cl. D8—41



276,407
HACK SAW FRAME
Daniel Jacoff, Mineola, N.Y., assignor to Great Neck Saw Manufacturers, Inc., Mineola, N.Y.
Filed Jun. 3, 1981, Ser. No. 269,798
Term of patent 14 years
U.S. Cl. D8—96

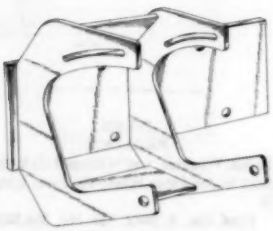


276,408
PADLOCK
Herbert E. Zabel, Wheaton, and William Lelyk, Roselle, both of Ill., assignors to American Home Products Corporation, New York, N.Y.
Filed Apr. 8, 1982, Ser. No. 366,549
Term of patent 14 years
U.S. Cl. D8—334



276,409
POLY-V PULLEY
Yukio Kanemitsu, Kobe, Japan, assignor to Goshi Kaisha Kanemitsu Doko Yosetsu-Sho, Japan
Filed Jun. 8, 1982, Ser. No. 386,323
Claims priority, application Japan, Dec. 16, 1981, 56-55936
The portion of the term of this patent subsequent to Nov. 23, 1996, has been disclaimed.
Term of patent 14 years
U.S. Cl. D8—360

276,410
MOUNTING BRACKET FOR AN AUTOMOTIVE AIR CONDITIONING COMPRESSOR
Shelton E. Taylor, 4112 Oakellar, Tampa, Fla. 33611
Continuation-in-part of Ser. No. 263,159, May 13, 1981,. This application Nov. 23, 1981, Ser. No. 324,119
Term of patent 14 years
U.S. Cl. D8—380



276,411
SPRING NUT LOCK
Peter A. Peroni, Pottstown, Pa., assignor to LaFrance Corporation, Philadelphia, Pa.
Filed Sep. 30, 1982, Ser. No. 430,269
Term of patent 14 years
U.S. Cl. D8—399

276,412
BOTTLE
Michael P. Toomey, New South Wales, Australia, assignor to Bristol-Myers Company, New York, N.Y.
Filed Mar. 19, 1982, Ser. No. 360,080
Claims priority, application Australia, Oct. 13, 1981, 85477
Term of patent 14 years
U.S. Cl. D9—375

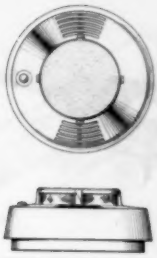
276,413
CONTAINER FOR MEDICINALS
Robert E. Porter, 700 Church Rd., and Richard Reube, 1001 Orvilla Rd., both of Hatfield, Pa. 19440
Filed Jun. 14, 1982, Ser. No. 388,269
Term of patent 14 years
U.S. Cl. D9—380

276,414
CONTAINER LID RETAINER
Ernest W. Prater, Irving, and Earl B. Fails, Keller, both of Tex., assignors to Southwest Foam Molding, Inc., Keller, Tex.
Filed Jun. 7, 1982, Ser. No. 386,030
Term of patent 14 years
U.S. Cl. D9—434

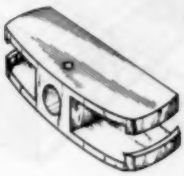
276,415
WRIST WATCH
Jean-Pierre Ecoffey, 13c, rue de Veyrot, 1217 Meyrin, Switzerland
Filed Jan. 21, 1982, Ser. No. 341,529
Claims priority, application Switzerland, Jul. 29, 1981, 71.644
Term of patent 14 years
U.S. Cl. D10—32

276,416
ELECTRONIC TIMER
Dana W. Mox, Elk Grove Village, Ill., assignor to Tricolor Corporation, Las Cruces, N. Mex.
Filed May 26, 1982, Ser. No. 382,245
Term of patent 14 years
U.S. Cl. D10—40

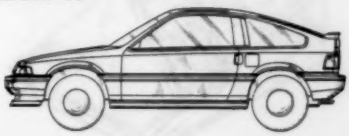
276,417
SMOKE DETECTOR
Kenneth R. Fenne, Glen Ellyn, Ill., assignor to Pittway Corporation, Aurora, Ill.
Filed Sep. 16, 1982, Ser. No. 418,631
Term of patent 14 years
U.S. Cl. D10—106



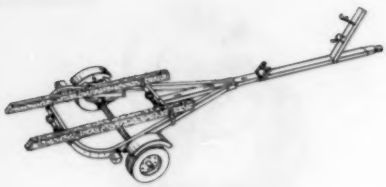
276,418
BICYCLE WHEEL REFLECTOR
Kent M. L. Andersson, Rubingatan 39, S-421 62 Västra Frölunda, Sweden
Filed May 20, 1982, Ser. No. 380,256
Claims priority, application Sweden, Nov. 25, 1981, 81-2749
Term of patent 14 years
U.S. Cl. D10—111



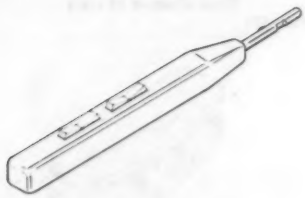
276,419
PASSENGER CAR
Tetsuya Mizuno, Tokyo; Shinichi Takahashi, and Yukio Kurosu, both of Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 10, 1982, Ser. No. 448,880
Term of patent 14 years
U.S. Cl. D12—91



276,420
BOAT TRAILER
Byron L. Godbersen, Lake LaJune Estates, Ida Grove, Iowa 51445
Filed Sep. 28, 1982, Ser. No. 425,632
Term of patent 14 years
U.S. Cl. D12—101



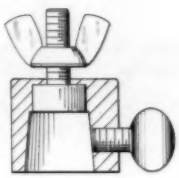
276,421
AUTOMOBILE TURN SIGNAL LEVER WITH TOGGLE SWITCHES
Mark L. Shaw, Fort Worth, Tex., assignor to Specific Cruise Systems, Inc., Ft. Worth, Tex.
Filed Dec. 27, 1982, Ser. No. 453,515
Term of patent 14 years
U.S. Cl. D12—174



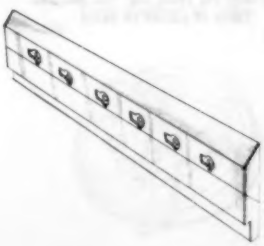
276,422
VEHICLE INSTRUMENT DISPLAY PANEL
Gregg C. Montgomery, Hinsdale, Ill., assignor to International Harvester Co., Chicago, Ill.
Filed Nov. 15, 1982, Ser. No. 441,708
Term of patent 14 years
U.S. Cl. D12—192

276,423
WHEEL FOR A MOTORCYCLE
Tatsuo Horikoshi, Tokyo, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Japan
Filed Feb. 1, 1982, Ser. No. 344,356
Claims priority, application Japan, Aug. 5, 1981, 56-34651
Term of patent 14 years
U.S. Cl. D12—211

276,424
BATTERY TERMINAL CONNECTOR
Pietro Di Piazza, 12 Robinson Ave., Succasunna, N.J. 07876
Filed May 26, 1982, Ser. No. 382,126
Term of patent 14 years
U.S. Cl. D13—10



276,425
CONTINUOUS ELECTRICAL TRACK SYSTEM
Michael Humphreys, London, England, assignor to Electrak International Limited, London, England
Filed Feb. 3, 1982, Ser. No. 345,317
Claims priority, application United Kingdom, Aug. 6, 1981, 1001840
Term of patent 14 years
U.S. Cl. D13—12

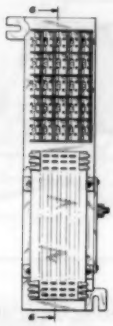


276,426

DEMARCATION TELEPHONE PROTECTOR BLOCK

Paul V. Deluca, Plandome Manor; Loren A. Singer, Jr., Mamaroneck, and Albert Atun, Valley Stream, all of N.Y., assignors to Porta Systems Corp., Syosset, N.Y.

Filed Jul. 29, 1982, Ser. No. 403,115
Term of patent 14 years
U.S. Cl. D13—24

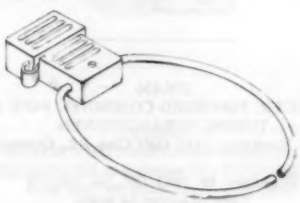


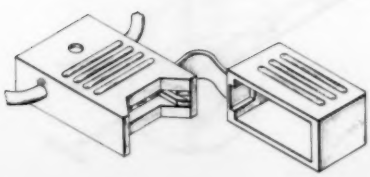
276,427

IN-LINE FUSE HOLDER

John B. Gordon, 55215 Mayflower Rd., South Bend, Ind. 46628

Filed Dec. 13, 1982, Ser. No. 449,171
Term of patent 14 years
U.S. Cl. D13—35



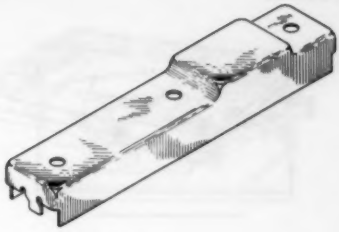


276,428

ELECTRONIC CIRCUIT ENCLOSURE OR SIMILAR ARTICLE

Raymond W. Burbank, N. Lauderdale; Bernard V. Gasparaitis, Tamarac, and William R. Williams, N. Lauderdale, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 1, 1982, Ser. No. 353,745
Term of patent 14 years
U.S. Cl. D13—40

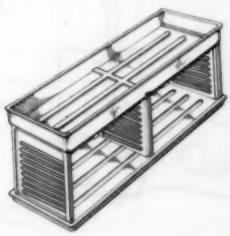


276,429

COMBINED PRINTED CIRCUIT BOARD CARRIER AND COMPONENT TRAY

Evans H. Pridgen, Raleigh, N.C., assignor to Northern Telecom Inc., Nashville, Tenn.

Filed Dec. 11, 1981, Ser. No. 329,945
Term of patent 14 years
U.S. Cl. D6—468

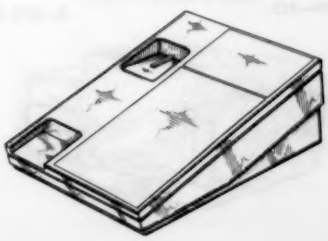


276,430

BASE FOR A TELECOMMUNICATIONS SET

Robert B. Isaacs, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Mar. 12, 1982, Ser. No. 357,777
Term of patent 14 years
U.S. Cl. D14—60



276,431

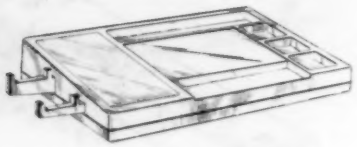
HOUSING FOR A DESK TELEPHONE STAND

Keith D. Bartley; James P. Dornbusch, both of Indianapolis, Ind.; Donald M. Genaro, Haworth, N.J.; John N. McGarvey, Drexel Hill, Pa.; Craig F. Sampson, Indianapolis, Ind., and Michael P. Zambelli, Maplewood, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jan. 5, 1983, Ser. No. 455,885

Term of patent 14 years

U.S. Cl. D14—60



276,432

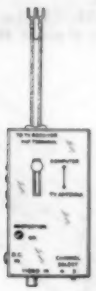
TELEVISION INTERFACE BOX

Marty Spergel, Box 61011, Sunnyvale, Calif. 94088

Filed Nov. 27, 1981, Ser. No. 325,297

Term of patent 14 years

U.S. Cl. D14—84



276,433

COMPUTER DISPLAY

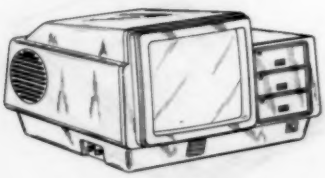
Hideki Takayama, Kiyose; Takeshi Abe, Tokyo; Tsuneo Hisa, Funabashi; Michiaki Kotsuka, Chiba, and Shuichi Hara, Funabashi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 17, 1982, Ser. No. 408,948

Claims priority, application Japan, Feb. 22, 1982, 57-6936

Term of patent 14 years

U.S. Cl. D14—113



276,434

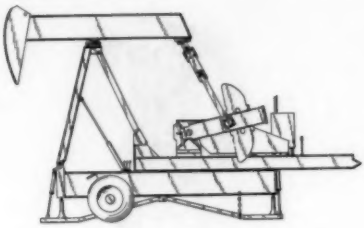
PORTABLE OIL WELL WALKING BEAM PUMP JACK

Roy N. Laney, P.O. Box 1085, Airport Rd., Frederick, Okla. 73542

Filed Nov. 19, 1982, Ser. No. 443,124

Term of patent 14 years

U.S. Cl. D15—7



276,435

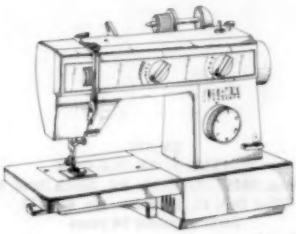
SEWING MACHINE OR SIMILAR ARTICLE

George LaPolice, Somerville; Michael P. Ballone, New Providence, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Apr. 22, 1982, Ser. No. 371,021

Term of patent 14 years

U.S. Cl. D15—69



276,436

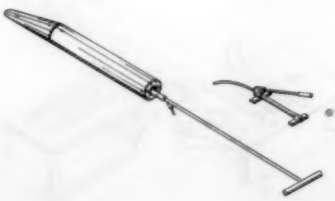
HYDRAULIC POWERED COMBINED PIPE AND TUBING STRAIGHTENER

Maynard D. Ikenberry, 2111 Golf Club Rd., Olympia, Wash. 98503

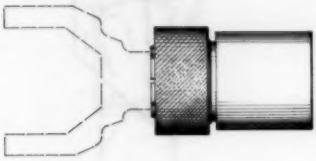
Filed Mar. 18, 1982, Ser. No. 359,416

Term of patent 14 years

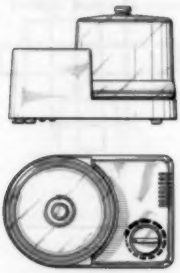
U.S. Cl. D15—122



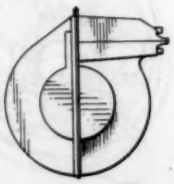
276,437
COLLET FOR TRANSMISSION SLEEVE YOKE ADAPTER
Louis D. Wilson, Folsom, Calif., assignor to Drive Line Service, Incorporated, West Sacramento, Calif.
Filed May 10, 1982, Ser. No. 376,987
Term of patent 14 years
U.S. Cl. D15—140



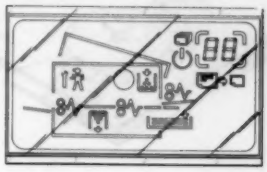
276,438
VACUUM PACKING UNIT
Roger W. Orton, Sacramento, Calif., assignor to Excalibur Products, Inc., Sacramento, Calif.
Filed Apr. 1, 1982, Ser. No. 364,245
Term of patent 14 years
U.S. Cl. D15—146



276,439
CASSETTE FOR PHOTOGRAPHIC ROLL MATERIALS
Gary E. Raymond, 755 S. Rainbow Dr., Hollywood, Fla. 33021
Filed Jun. 14, 1982, Ser. No. 387,828
Term of patent 14 years
U.S. Cl. D16—32

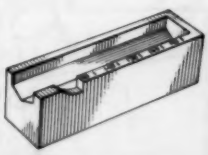


276,440
DISPLAY PANEL FOR COPYING MACHINES
Yohzoh Matsuzaka, Yokohama; Shigeki Yasutani, Kashiwa; Yuji Ishikawa, Machida; Hiroshi Matsumoto, and Chosin Nakamine, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed Sep. 16, 1982, Ser. No. 419,066
Term of patent 14 years
U.S. Cl. D16—32

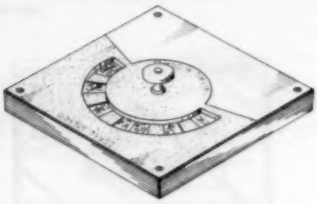


276,441
GUITAR HEAD
Dennis A. Berardi, Holmdel, N.J., and Raymond Scherr, Van Nuys, Calif., assignors to Kramer Music Products, Inc., Neptune, N.J.
Filed May 14, 1982, Ser. No. 378,345
Term of patent 14 years
U.S. Cl. D17—20

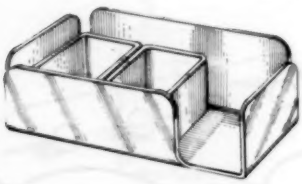
276,442
COIN COUNTER
Claude V. Holland, P.O. Box 652, Sebring, Fla. 33870
Filed Mar. 18, 1982, Ser. No. 359,194
Term of patent 14 years
U.S. Cl. D18—3



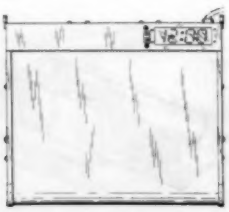
276,443
MUSIC SCALE
John Sperti, 30 Woodland Dr. Box 312, RD 3, Binghamton, N.Y. 13901
Filed Jun. 24, 1982, Ser. No. 391,584
Term of patent 14 years
U.S. Cl. D19—64



276,444
DESK ORGANIZER TRAY
David Battle, Yellow Springs, Ohio, assignor to Visual Information Institute, Inc., Xenia, Ohio
Filed May 3, 1982, Ser. No. 374,049
Term of patent 14 years
U.S. Cl. D19—75

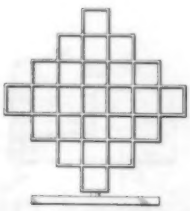


276,445
ILLUMINATED SIGN WITH CLOCK
David U. Hillstrom, Novi, Mich., assignor to Marketing Displays, Inc., Farmington Hills, Mich.
Filed Nov. 16, 1982, Ser. No. 442,832
Term of patent 14 years
U.S. Cl. D20—20

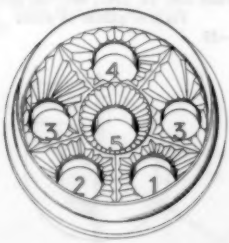


276,446
SUPPORT FOR ADVERTISING MATERIAL
Kelvin G. Whitford, Richmond, Australia, assignor to Transit Signs Pty. Ltd., Sydney, Australia
Filed Dec. 11, 1981, Ser. No. 329,864
Claims priority, application Australia, Jul. 3, 1981, 84546
Term of patent 14 years
U.S. Cl. D20—42

276,447
VERTICAL GAME BOARD
Ricardo Escamilla-Kelly, 8374 Leamont, Houston, Tex. 77072
Filed Feb. 8, 1982, Ser. No. 346,492
Term of patent 14 years
U.S. Cl. D21—20



276,448
TOSSING GAME BASE
Bill S. Kim, 1238 S. Orange Dr., Los Angeles, Calif. 90019, and Jung B. Ban, 161 S. Occidental Blvd. #1, Los Angeles, Calif. 90057
Filed May 19, 1982, Ser. No. 379,727
Term of patent 14 years
U.S. Cl. D21—5

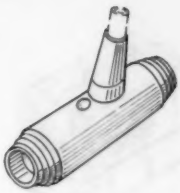


276,449
COMBINED DARTBOARD AND STAND
Gary D. Morrion, 313 Ridgeview Dr., North Braddock, Pa. 15104, and Leonard J. Matta, 30 Nobile Rd., Greensburg, Pa. 15601
Filed Jun. 18, 1982, Ser. No. 389,848
Term of patent 14 years
U.S. Cl. D21—6

276,450
POP-UP SUCTION TOY
Richard L. Panicci, Hanover, Mass., assignor to Kiddie Products, Inc., Avon, Mass.
Filed Jul. 8, 1982, Ser. No. 396,160
Term of patent 14 years
U.S. Cl. D21—65

276,451
SUCTION TOY
Richard L. Panicci, Hanover, Mass., assignor to Kiddie Products, Inc., Avon, Mass.
Filed Jul. 8, 1982, Ser. No. 396,161
Term of patent 14 years
U.S. Cl. D21—65

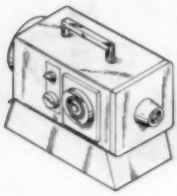
276,452
PUTTER HEAD
Theodore L. Doman, 32863 Myrna, Livonia, Mich. 48154
Filed Jun. 14, 1982, Ser. No. 387,980
Term of patent 14 years
U.S. Cl. D21—218



276,453
SPRINKLER HEAD
William A. DeVroom, Glendora, Calif., assignor to Rain Bird Consumer Products Corp., Duarte, Calif.
Filed May 3, 1982, Ser. No. 374,638
Term of patent 14 years
U.S. Cl. D23—6

276,454
IMPACT DRIVE SPRINKLER
Richard D. Brown, Glendora, and Hans D. Christen, La Verne, both of Calif., assignors to Rain Bird Sprinkler Mfg. Corp., Glendora, Calif.
Filed Feb. 25, 1982, Ser. No. 352,323
Term of patent 14 years
U.S. Cl. D23—7

276,455
TIMED SPRAYER UNIT
Masanao Yoshizawa, 5046-1, Ohaza Hiraga Saku-shi Nagonken, Japan
Filed Apr. 13, 1981, Ser. No. 253,963
Term of patent 14 years
U.S. Cl. D23—18

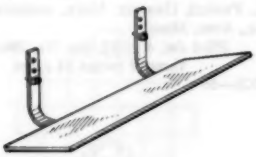


276,456
BATHTUB
Andre Primault, Garches, France, assignor to Societe Generale de Fonderie, Paris, France
Filed Oct. 23, 1981, Ser. No. 314,426
Claims priority, application France, Jun. 8, 1981, 812041
Term of patent 14 years
U.S. Cl. D23—55

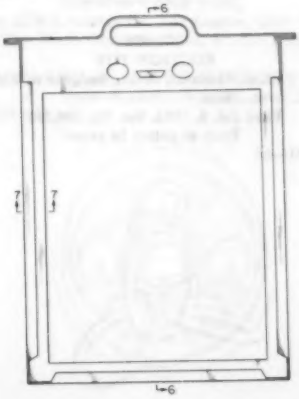
276,457
SOLID FUEL STOVE
Niels-Erik Heger, Jessheim, Norway, assignor to Aktieselskapet Jotul, Oslo, Norway
Filed Apr. 12, 1983, Ser. No. 484,416
Claims priority, application Norway, Jan. 31, 1983, 63714
Term of patent 14 years
U.S. Cl. D23—97

276,458
OIL HEATER
Daisaku Mori; Yuzo Fujii, both of Nara, and Sayoko Kanda, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Nov. 29, 1982, Ser. No. 444,908
Claims priority, application Japan, Jun. 4, 1982, 57-24849
Term of patent 14 years
U.S. Cl. D23—123

276,459
HEAT DEFLECTOR FOR A FIREPLACE, OR SIMILAR ARTICLE
Clinton E. Perdue, Rte. 1, Box 32-1A, Bremen, Ala. 35033
Filed Jun. 17, 1982, Ser. No. 389,370
Term of patent 14 years
U.S. Cl. D23—137



276,460
X-RAY FILM FRAME
Roderique S. Gemmill, Davie, Fla., assignor to Radiation Concepts, Inc., Davie, Fla.
Filed Apr. 2, 1982, Ser. No. 365,088
Term of patent 14 years
U.S. Cl. D24—2



276,461
BENT LEG SERREFINE

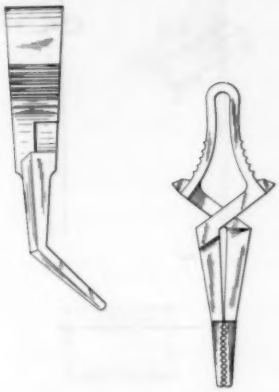
Dennis R. Scanlan, Jr., Boca Raton, Fla., and Robert A. Arp, Eden Prairie, Minn., assignors to Scanlan International, St. Paul, Minn.

Filed Oct. 5, 1981, Ser. No. 308,442

The portion of the term of this patent subsequent to Apr. 5, 1997, has been disclaimed.

Term of patent 14 years

U.S. Cl. D24—27



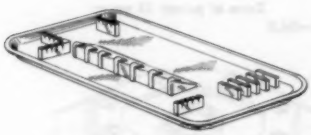
276,462
SURGICAL INSTRUMENT TRAY

Isamari Villarreal, 830 S. Flower, Santa Ana, Calif. 92703

Filed Mar. 11, 1982, Ser. No. 357,262

Term of patent 14 years

U.S. Cl. D24—31



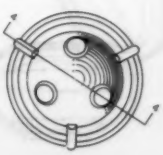
276,463
ACETABULAR CUP

John E. Hamm, Warsaw, Ind., assignor to Zimmer, Inc., Warsaw, Ind.

Filed May 3, 1982, Ser. No. 373,947

Term of patent 14 years

U.S. Cl. D24—33



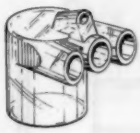
276,464
RESPIRATORY GAS FLOW MANIFOLD

James Weigl, 2241 Chicago Ave., Riverside, Calif. 92507, and Burrell E. Clawson, 823 W. 16th St., Newport Beach, Calif. 92663

Filed Apr. 23, 1982, Ser. No. 371,314

Term of patent 14 years

U.S. Cl. D24—53



276,465
STRAIGHT FLOW MANIFOLD

Burrell E. Clawson, 823 W. 16th St., Newport Beach, Calif. 92623, and James Weigl, 2241 Chicago Ave., Riverside, Calif. 92507

Filed Apr. 23, 1982, Ser. No. 371,316

Term of patent 14 years

U.S. Cl. D24—53

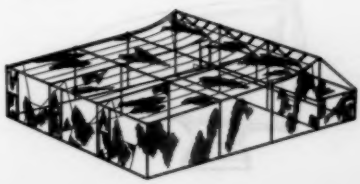
276,466
BATTING CAGE

Paul S. Giovagnoli, Kansas City, Mo., assignor to Master Pitching Machine, Inc., Kansas City, Mo.

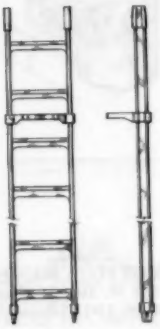
Filed Nov. 8, 1982, Ser. No. 439,922

Term of patent 14 years

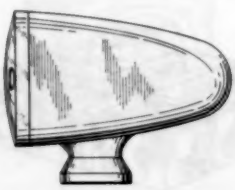
U.S. Cl. D25—1



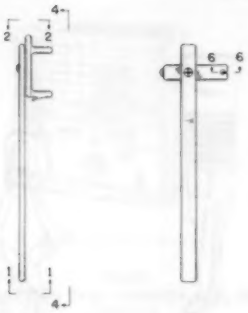
276,467
INTERFITTING LADDER
Edouard Singer, 53, Rue de Mulhouse, Morschwiller-le-Bas, France (68790)
Filed Apr. 5, 1982, Ser. No. 365,269
Claims priority, application France, Oct. 5, 1981, 97
Term of patent 14 years
U.S. Cl. D25—64



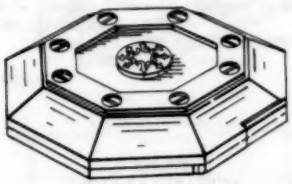
276,468
MOTORCYCLE MARKER LIGHT
James M. Preisler, Mound, and Alwin J. Stahel, St. Paul, both of Minn., assignors to Drag Specialties, Inc., Minnetonka, Minn.
Filed May 20, 1982, Ser. No. 380,059
Term of patent 14 years
U.S. Cl. D26—28

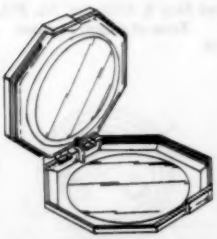


276,469
DENTAL FLOSS HOLDER
Jonathon P. Doyle, 1120 Chatterleigh Cir., Towson, Md. 21204
Filed Mar. 5, 1982, Ser. No. 355,133
Term of patent 14 years
U.S. Cl. D28—64



276,470
VANITY MIRROR
Eddie Y. H. Lo, 1st & 3rd Flrs., LMK Development Estate, 10-16 Kwai Ting Rd., Kwai Chung, New Territories, Hong Kong
Filed Jun. 16, 1982, Ser. No. 389,103
Claims priority, application United Kingdom, Dec. 21, 1981, 1004264
Term of patent 14 years
U.S. Cl. D28—64.3





276,471

COMBINED LIPSTICK HOLDER AND ILLUMINABLE MIRROR

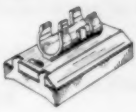
Eddie Y. H. Lo, 1st & 3rd Flrs., LMK Development Estate, 10-16 Kwai Ting Rd., Kwai Chung, New Territories, Hong Kong

Filed Jun. 16, 1982, Ser. No. 389,120

Claims priority, application United Kingdom, Jan. 15, 1982, 1004634

Term of patent 14 years

U.S. Cl. D28—64.3



276,472

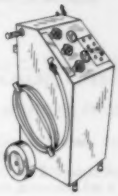
STEAM CLEANING MACHINE

Frank Harrison, Kansas City, Mo., assignor to Harrison/Faultless Systems, Inc., Kansas City, Mo.

Filed Mar. 8, 1982, Ser. No. 356,173

Term of patent 14 years

U.S. Cl. D32—1



276,473

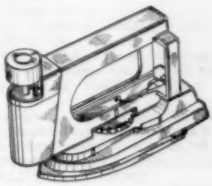
SPRAY STEAM IRON

Shinri Ogawa, and Takuya Yamano, both of Tottori, Japan, assignors to Sanyo Electric Co., Ltd., Keihan-Hondori, Japan

Filed Mar. 10, 1983, Ser. No. 473,932

Term of patent 14 years

U.S. Cl. D32—70



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TO WHOM

PATENTS WERE ISSUED ON THE 20TH DAY OF NOVEMBER, 1984

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. B. Chance Company: *See*—
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AB Volvo: *See*—
Schlicker, Heinrich A., 4,483,687, Cl. 474-28.000.

Abbott Laboratories: *See*—
Fukui, George M.; Spencer, Herbert J.; and Williams, Laurens R., II, 4,483,926, Cl. 436-16.000.

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Abe Hisao: *See*—
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Abe, Masahiro; and Motosaka, Katsuo, to Hitachi, Ltd. Vortex blower. 4,483,656, Cl. 415-53.00T.

Abe, Morio: *See*—
Fujimura, Isao; Nakajima, Sadaaki; Abe, Morio; and Taniguchi, Masahiko, 4,483,897, Cl. 428-288.000.

Abelitis, Andris: *See*—
Schmidt, Martin; Kohler, Walter; and Abelitis, Andris, 4,483,831, Cl. 423-175.000.

Aberer, James B.: *See*—
Whittenburg, Stephen L.; Aberer, James B.; Edmonds, Albert V.; Yang, Ching-Wen; Streck, Vernon W.; Rodick, Vernon F.; and Enoch, Robert C., 4,484,063, Cl. 219-400.000.

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Whelan, James P., 4,483,460, Cl. 221-303.000.

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Gray, Jerry B.; Adams, Cuba M.; and Christensen, Larry B., 4,484,031, Cl. 179-18.0BE.

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Le Pecq, Jean-Bernard; Paoletti, Claude; and Dat-Xuong, Nguyen, 4,483,989, Cl. 546-70.000.

Agfa-Gevaert Aktiengesellschaft: *See*—
Kampfer, Helmut; Wendisch, Detlef; and Hase, Marie, 4,483,799, Cl. 260-456.00R.

Agfa-Gevaert, N. V.: *See*—
Van de Sande, Christian C.; Van den Bergh, Armand M.; and Janssens, Wilhelmus, 4,483,915, Cl. 430-223.000.

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Takeuchi, Hiroaki; Kawaguchi, Hiroshi; Nishiwaki, Kiyoshi; Toba, Fujio; and Nomura, Yoshihisa, 4,483,145, Cl. 60-578.000.
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Albaugh, Edgar W.: *See*—
Kuk, Myong S.; Albaugh, Edgar W.; and Montagna, John C., 4,483,763, Cl. 208-254.00H.

Albrecht, Wolf-Wigand; and Papp, Uwe, to Hermann C. Starck Berlin. Production of highly capacitive agglomerated valve metal powder and valve metal electrodes for the production of electrolytic capacitors. 4,483,819, Cl. 419-2.000.

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Gailey, J. Lynn, 4,483,116, Cl. 52-484.000.

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Alcock, A. John: *See*—
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Aldrich, Wilbert H.: *See*—
Provanzano, Salvatore R.; Aldrich, Wilbert H.; D'Angelo, Robert A.; Drottar, Emil P.; Finnegan, John J., Jr.; Heom, James; Hill, Lawrence W.; Malcolm, Ronald D.; Nollet, Michael C.; Perlman, Baruch S.; Tressler, Michael B.; Van Schalkwyk, John E.; and Webb, Kincade N., 4,484,303, Cl. 364-900.000.

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Alley, Ronald S., Sr. Ski tow signal assembly. 4,483,683, Cl. 441-69.000.

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Gregor, John A.; and Sellers, Gregory J., 4,484,184, Cl. 340-572.000.
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Pressley, Robert J., 4,484,334, Cl. 372-101.000.
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AM International, Inc.: *See*—
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Andersson, Inger A.: *See*—
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Artman, Noel G. Process of segregating air-fuel mass in engine auxiliary chamber. 4,483,291, Cl. 123-286.000.

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Ashline, William J.: *See*—
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Axelrod, Robert J., to General Electric Company. Polyphenylene ether resins and compositions heat stabilized with trineopentylene diphosphite. 4,483,953, Cl. 524-119.000.
Ayler, Steven E., to United States of America, Navy. Heater for ultra high pressure compressed gas. 4,483,364, Cl. 137-334.000.
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Layer, Robert W., 4,484,010, Cl. 568-732.000.
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Heeres, Jan; Backx, Leo J. J.; and Mostmans, Joseph H., 4,483,865, Cl. 424-273.00R.
Bacon, Franklin C., Jr.; and Brooks, Robert L., to Freeport Kaolin Company. High intensity conditioning mill and method. 4,483,624, Cl. 366-293.000.
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Cerny, Daryl D., 4,483,891, Cl. 428-35.000.
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Bartlett, Robert W.; and Jorgensen, Paul J., to S R I International. Process for applying thermal barrier coatings to metals. 4,483,720, Cl. 148-6.300.
Barton, Robert J. Photograph display and storage device. 4,483,085, Cl. 40-156.000.
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Basso, Louis G., Jr.: *See*—
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Baumgartner, Hans: *See*—
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Emmel, Henry J., 4,483,589, Cl. 350-254.000.

Bavina, Tamara V.: *See*—
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Wehinger, Egbert; and Bossert, Friedrich, 4,483,985, Cl. 544-131.000.

Bayha, Renee: *See*—
Stahl, Howard; Bayha, Renee; Fulger, Charles V.; and Turek, Evan J., 4,484,012, Cl. 568-863.000.

BBC, Brown, Boveri & Company, Limited: *See*—
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Beasley, Max M.: *See*—
Green, Jerry T.; and Beasley, Max M., 4,483,261, Cl. 112-79.00R.

Beck, Ernst; Lenard, Peter; and Pokorny, Erich, to Vollmer Werke Maschinenfabrik GmbH. Means for positioning a saw blade in a machine for working on saws. 4,483,217, Cl. 76-75.000.

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Beck, Martin H.: *See*—
Krishnakumar, Suppayan M.; Beck, Martin H.; and Harry, Ieuan L., 4,483,436, Cl. 198-648.000.

Becker, Donald L.; and Edwards, John C., to United States of America, Navy. Externally specified index peripheral simulation system. 4,484,266, Cl. 364-200.000.

Becton, Dickinson and Company: *See*—
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Musick, Jeff L.; Blaker, Robert D.; and Blaker, David G., Jr., 4,484,043, Cl. 200-85.00R.

Bedard, James F., to General Electric Company. System for load output level control. 4,484,190, Cl. 340-825.570.

Bedard, James F.; Eichelberger, Charles W.; and Nati, Salvator F., Jr., to General Electric Company. Control circuit and method for varying the output of a waveform generator to gradually or rapidly vary a control signal from an initial value to a desired value. 4,484,295, Cl. 364-607.000.

Beery, Floyd; Rensoe, Ronald R.; and Williams, Larry, to Hallmark Cards, Inc. Decorating with shrink film. 4,483,890, Cl. 428-7.000.

Beetner, Mike, to Idea Research Development Corp. Television monitor. 4,484,220, Cl. 358-190.000.

Beiermann, Norbert; Scheller, Manfred; Kretschmer, Horst; Noack, Jurgen; Blaschke, Klaus-Dieter; Heinz, Lothar; Gohler, Peter; Schweigel, Hans-Joachim; Deicke, Hanshans-Heinrich; Rudolph, Klaus-Peter; and Flachowsky, Johannes, to Brennstoffinstitut Freiberg. Method of measuring solid matter mass flow. 4,483,199, Cl. 73-861.040.

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Beitel, Jeffrey S.: *See*—
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Bel Fuse, Inc.: *See*—
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Atkov, Oleg J.; Popov, Anatoly V.; Mukharlyamov, Nurmukhamed M.; Baranov, Vladimir F.; Belenkov, Jury N.; Frolov, Alexandr N.; Odintsov, Nikolai G.; and Fomina, Galina A., 4,483,344, Cl. 128-661.000.

Bell & Howell Company: *See*—
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Spencer, William H.; McMansman, Raymond M.; and Teves, Roy A., 4,483,530, Cl. 271-236.000.

Bellaiche, Hubert G.; and Gebelin, Bernard M., to Framatome & Cie. Apparatus for removing deposits from irradiated fuel elements. 4,483,205, Cl. 73-863.230.

Bellew, Francis N., to Lockheed Electronics Corp. Radar apparatus for detecting and/or classifying an agitated reflective target when relative translation obtains. 4,484,193, Cl. 343-5.0SA.

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Chance, James L., 4,483,083, Cl. 34-113.000.
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Beltronics, Inc.: *See*—
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Ben Clements & Sons, Inc.: *See*—
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Bender, Albert, to Maschinenfabrik Gehring, Gesellschaft mit beschrankter Haftung & Co. Kommanditgesellschaft. Device to hold workpieces for the honing of their axial center bore. 4,483,105, Cl. 51-227.00R.

Bendix Corporation, The: *See*—
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Seitz, William R.; Farrah, Harry R.; Brumm, Gerald A.; Evans, Lansing B.; and Walter, Chris J., 4,484,192, Cl. 340-995.000.

Benmol Corporation: *See*—
Molayem, Benjamin; and Garrett, David, 4,483,259, Cl. 110-345.000.

Bennett, Robert M.; and Chapman, Ronald H., to Motorola, Inc. Continuous tone decoder/encoder. 4,484,354, Cl. 455-35.000.

Benoit, Philippe: *See*—
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Benson, Ron. Combined guitar and bass guitar having eight strings. 4,483,233, Cl. 84-263.000.

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Bentley, William H., Jr., to Raychem Corporation. Overcoated bulky sleeving and electrical insulation method. 4,484,024, Cl. 174-121.00R.

Beran, Mark A., to BC Creations, Inc. Foldable protective cover and carrier for sports equipment. 4,483,380, Cl. 150-52.00R.

Berenbaum, Alan D.; Jagannathan, Anand; Molinelli, John J.; and Pekarich, Steven P., to AT&T Bell Laboratories. Computer system with improved process switch routine. 4,484,274, Cl. 364-200.000.

Beresford, Michael P.; Potter, Susan E.; and Ritchie, Philip J. A., to Dulux Australia Ltd. Process of preparing vesiculated polyester granules. 4,483,945, Cl. 521-62.000.

Berger, Robert C.; and Smack, James W. Erosion control device. 4,483,640, Cl. 405-15.000.

Berges, Hanns-Peter; Frieden, Peter; and Kabelitz, Hans-Peter, to Leybold-Heraeus GmbH. Vacuum pump and method of operating the same. 4,483,667, Cl. 418-84.000.

Berkley, George A.: *See*—
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Bernabe, Vincent, Jr., to Kidde, Inc. Safety mounting for side stowable boom extension or jib. 4,483,447, Cl. 212-188.000.

Bernard, Jean: *See*—
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Bernstein, Elliot, to Bel Fuse, Inc. Process of multiple fuse construction. 4,483,064, Cl. 29-623.000.

Bertin & Cie: *See*—
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Berzina, James A., to Spelts-Schultz Lumber Co. Retaining strap for pre-hung doors. 4,483,101, Cl. 49-380.000.

Betschart, Anton-Peter. Support system for building construction. 4,483,118, Cl. 52-648.000.

Betz, Howard T.; and Schulenburg, Edward J., Jr., to HurletronAltair, Inc. Registration mark detector. 4,484,079, Cl. 250-548.000.

Betz Laboratories, Inc.: *See*—
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Beuscher, Hugo J.; Bosco, Harry L.; Huizinga, Allen H.; and Williams, John R., to AT&T Bell Laboratories. Communication arrangements for distributed control systems. 4,484,323, Cl. 370-58.000.

Beutler, Paul S.: *See*—
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Beyer, Johann; and Derndinger, Walter, to Siemens Aktiengesellschaft. Ultrasonic applicator. 4,483,343, Cl. 128-660.000.

Beyl, Jean J. A.; Bernard, Jean; Guerreau, Rene ; le Faou, Daniel; and Peyre, Henri, to Ste Look. Ski brake. 4,483,551, Cl. 280-605.000.

Bickel, Hansjorg, to Maag Gear-Wheel & Machine Company Limited. Dressing apparatus for a dished grinding wheel at a tooth flank-grinding machine. 4,483,103, Cl. 51-165.870.

Bieringer, Robert J.; Kohler, Robert D.; and Ringlien, James A., to Owens-Illinois, Inc. Method and apparatus for detecting checks in glass tubes. 4,483,615, Cl. 356-237.000.

Bigley, Lloyd M.: *See*—
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Bindel, Rudolf; and Ruoff, Eugen, to Elring Dichtungswerke GmbH. Method of making a cylinder head gasket. 4,483,539, Cl. 277-1.000.

Binder, Erich G., to Gretag Aktiengesellschaft. Device to position a copy master in a copying apparatus. 4,483,612, Cl. 355-76.000.

Birmingham Bolt Company: *See*—
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Bisbee, Gary W.: *See*—
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Bishop, Robert, to Beltronics, Inc. Electronic focusing method and apparatus for television pick-up cameras and the like. 4,484,225, Cl. 358-227.000.

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Bitondo, James M., to Butler Manufacturing Company. Multiple chiller control method. 4,483,152, Cl. 62-175.000.

Bitzer, Wolfgang: *See*—
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Bixler, Richard M.: *See*—
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Black, Alfred A. Poppet valve spring retainer with integral hydraulic tappet. 4,483,281, Cl. 123-90.550.
Black & Decker Inc.: *See*—
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Sauerwein, William D.; Dibbern, John E., Jr.; O'Hara, Frank J.; and Moores, Robert G., Jr., 4,484,096, Cl. 310-260.000.
Black, James B., to Twin Disc, Inc. Torsional impulse damper for direct connection to universal joint drive shaft. 4,483,684, Cl. 464-68.000.
Blahut, Donald E.; and Harrison, Marc L., to AT&T Bell Laboratories. Stored-program control machine. 4,484,260, Cl. 364-716.000.
Blair, James E., to Sybron Corporation. Microbiological process for removing non-ionic surface active agents, detergents and the like from wastewater and microorganism capable of same. 4,483,923, Cl. 435-253.000.
Blaker, David G., Jr.: *See*—
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Blaker, Robert D.: *See*—
Musick, Jeff L.; Blaker, Robert D.; and Blaker, David G., Jr., 4,484,043, Cl. 200-85.00R.
Blanding, Wendell S.; and VanDewoestine, Robert V., to Corning Glass Works. Television bulb. 4,483,452, Cl. 220-2.10A.
Blankenburg, Heinz; Schafer, Peter; Marr, Fritz; Kollner, Harald; Grimm, Rainer; Scherf, Wilhelm; and Bohm, Horst, to Rockwell-Golde G.m.b.H. Pane guide for a sliding window capable of being lowered into the window shaft of an automobile. 4,483,100, Cl. 49-352.000.
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Goodman, Howard; and Bleakley, Ian S., 4,483,934, Cl. 501-147.000.
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Wisner, Ingo; and Bley, Adolf, 4,483,635, Cl. 400-642.000.
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Boedecker, Eugene R.: *See*—
Korsmo, Edward S.; and Boedecker, Eugene R., 4,483,392, Cl. 165-150.000.
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Boehringer, Wilfred E., to McDonnell Douglas Corporation. Flight control surface coupling system. 4,483,498, Cl. 244-75.00R.
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Bordien, Edgar; and Jasch, Hans-Peter, to EG&G Sealol GmbH. Outboard sterntube seal for oil-lubricated bearings of ships. 4,483,540, Cl. 277-2.000.
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Borner, Paul; Dubel, Jurgen; and Hofmann, Jurgen, to Nukem GmbH. Process for the production of U_3O_8 powder. 4,483,806, Cl. 264-0.500.
Borras, Jaime A.; Gonzalez, Ruben J.; Smith, Daniel M.; Suarez, Jose I.; Victor, Alan M.; and Wieczorek, Alfred B., to Motorola, Inc. Voltage converter for a frequency synthesizer. 4,484,153, Cl. 331-10.000.
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Bose, Bimal K., to General Electric Company. Microprocessor-based control apparatus for a direct current machine drive system. 4,484,117, Cl. 318-338.000.
Bossert, Friedrich: *See*—
Wehinger, Egbert; and Bossert, Friedrich, 4,483,985, Cl. 544-131.000.
Bottomley, Paul A.; and Edelstein, William A., to General Electric Company. Method of eliminating effects of spurious free induction decay NMR signal caused by imperfect 180 degrees RF pulses. 4,484,138, Cl. 324-307.000.
Bowerman, Paul D.: *See*—
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Boyle, William G.: *See*—
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Brabston, Donald C., Jr.: *See*—
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Bradley, John J.: *See*—
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Brantingham, George L., to Texas Instruments Incorporated. Data processing system having interlinked fast and slow memory means and interlinked program counters. 4,484,261, Cl. 364-200.000.
Brashear, Robert S., to Clayton & Lambert Manufacturing Co. Biomass gasifier combustor system and components therefor. 4,483,256, Cl. 110-210.000.
Braun Aktiengesellschaft: *See*—
Raducanu, Dan-Corneliu, 4,484,123, Cl. 318-696.000.
Braus, Harry; Barlow, Anthony; and Maringer, Melvin F., to National Distillers and Chemical Corporation. Silanes useful as water tree and electrical tree resistant additives. 4,483,954, Cl. 524-261.000.
Bravenec, Frank R., to Halliburton Company. Zoom guard resistivity logging system featuring resistogram profile. 4,484,139, Cl. 324-366.000.
Brearley, Malcolm, to Lucas Industries public limited company. Self-levelling suspension. 4,483,546, Cl. 280-6.00R.
Bredow, Walter, to C. Behrens AG. Arrangement on coordinate table of processing machine for carriage drive. 4,483,523, Cl. 269-60.000.
Breen, Cydney E. Shoe support apparatus. 4,483,039, Cl. 15-268.000.
Breitenstein, Werner; Fory, Werner; Nyfeler, Robert; and Boger, Manfred, to Ciba-Geigy Corporation. Phenylamino-oxo-acetic acids and esters thereof as antidotes for protecting cultivated plants from the phytotoxic action of aggressive herbicides. 4,483,707, Cl. 71-94.000.
Brende, Arthur P.; and Neubauer, Jerry L., to International Business Machines Corporation. Automatic lock for head-carriage assembly in a disk file. 4,484,241, Cl. 360-105.000.
Brenholdt, Irving R., to St. Regis Paper Company. Apparatus and method for sensing distance. 4,484,069, Cl. 250-201.000.
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Bresie, Don A.; Burns, Jack M.; and Fowler, Donald W. Natural gas loading station. 4,483,376, Cl. 141-95.000.
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Briccetti, Mario F.; and Manning, John D., to Carrier Corporation. Apparatus and method for providing failsafe supplemental heat regulation in an air conditioning control. 4,483,388, Cl. 165-2.000.
Briddell, Charles D. Crab meat processing machine. 4,483,046, Cl. 17-32.000.
Bridle, Peter F., to SCM Corporation. Liquid soaps comprising pine oil and soap-making acid for use in paper-recycling. 4,483,742, Cl. 162-5.000.
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Brill, Eugene L., deceased; and Brill, Beatrice, administrator, 4,483,774, Cl. 210-788.000.
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Rolke, Dietrich; Hitzel, Hans; and Brink, Andries, 4,483,772, Cl. 210-601.000.
Briska, Marian: *See*—
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British-American Tobacco Company Limited: *See*—
Mitchell, Terence G., 4,483,353, Cl. 131-297.000.
British Petroleum Company p.l.c., The: *See*—
Mayer, Rayner M., 4,483,214, Cl. 74-572.000.
Broaddus, Charles D.: *See*—
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Salm, Dietmar F. E., 4,483,907, Cl. 428-629.000.
Bronner, Jean-Claude: *See*—
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Brooks, Robert L.: *See*—
Bacon, Franklin C., Jr.; and Brooks, Robert L., 4,483,624, Cl. 366-293.000.
Brooks, Wahner E., to United States of America, Army. Ground contact area measurement device. 4,483,076, Cl. 33-123.000.
Bross, Erwin; Staudinger, Franz; and Tuchler, Theodor J., to Robert Bosch GmbH. Method and apparatus for cleaning machined parts. 4,483,718, Cl. 134-25.100.
Brouwer, Anton H. J.: *See*—
Huntjens, Franciscus J.; and Brouwer, Anton H. J., 4,483,970, Cl. 525-440.000.
Brown, Boveri and Cie AG: *See*—
Bunk, Klaus; Neidig, Arno; Wahl, Georg; and Keser, Helmut, 4,483,810, Cl. 264-60.000.
Brown, Gary: *See*—
Dorman, William E.; and Brown, Gary, 4,484,038, Cl. 200-5.00A.
Brown, James W.; and Stoddard, William S., to AT&T Bell Laboratories. Video overlay system having interactive color addressing. 4,484,187, Cl. 340-703.000.
Brown, William H.; and Ahuja, Krishan K., to Lockheed Corporation. Fluctuating pressure measuring apparatus with miniature, high temperature, pressure transducer. 4,483,195, Cl. 73-702.000.
Brugger, Franz; Burckhardt, Manfred; Grossner, Horst; Kostelezky, Walter; Schlosser, Siegfried; and Zimmer, Richard, to Daimler-Benz Aktiengesellschaft. System for controlling the propulsion on motor vehicles. 4,484,280, Cl. 364-426.000.
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Seitz, William R.; Farrah, Harry R.; Brumm, Gerald A.; Evans, Lansing B.; and Walter, Chris J., 4,484,192, Cl. 340-995.000.
Brussalis, William G., Jr., to United States of America, Energy. Piping support system for liquid-metal fast-breeder reactor. 4,483,500, Cl. 248-58.000.
bso Steuerungstechnik GmbH: *See*—
Gibas, Christoph, 4,484,167, Cl. 335-260.000.
Bucknam, Donald C. Power plant and process utilizing gravitational force. 4,484,082, Cl. 290-1.00R.
Budwey, Michael J.: *See*—
Stiffler, Jack J.; Karp, Richard A.; Nolan, James M., Jr.; Budwey, Michael J.; and Wallace, David A., 4,484,273, Cl. 364-200.000.
Bulka, Raymond A.; Higgins, George D.; and McCain, William B., to McCain Manufacturing Corporation. Turning conveyor and selected book signature turning method. 4,483,526, Cl. 270-54.000.
Bulso, Joseph D., Jr.; Doyle, Stephen D.; and McClung, James A., to Redicon Corporation. System and apparatus for forming containers. 4,483,172, Cl. 72-349.000.
Bunk, Klaus; Neidig, Arno; Wahl, Georg; and Keser, Helmut, to Brown, Boveri and Cie AG. Method for directly joining metal pieces to oxide-ceramic substrates. 4,483,810, Cl. 264-60.000.
Burbank, John E., III; and Montgomery, John R., to Minnesota Mining and Manufacturing Company. Microfiche card transport apparatus. 4,483,600, Cl. 353-118.000.
Burckhardt, Manfred: *See*—
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Burquier, Jean-Luc: *See*—
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Burroughs Corporation: *See*—
Green, Howard H., 4,484,272, Cl. 364-200.000.
Pappas, Nicholas L., 4,484,215, Cl. 357-80.000.
Wilson, Jesse R.; and Logsdon, Gary L., 4,484,325, Cl. 370-60.000.
Burton, James A.: *See*—
Hynes, Joseph H.; and Burton, James A., 4,483,542, Cl. 277-31.000.
Buschmann, Gerhard, to Jagenberg AG. Apparatus for dispensing very small quantities of liquid. 4,483,463, Cl. 222-64.000.
Buser, Johann. Ignition system for gas discharge lamps. 4,484,109, Cl. 315-290.000.
Bush, Robert E., to Gray Tool Company. Fire resistant connections and double ribbed sealing means therefor. 4,483,545, Cl. 277-211.000.
Butler Manufacturing Company: *See*—
Bitondo, James M., 4,483,152, Cl. 62-175.000.
Byrne, Francis J. Elevator door interlocking apparatus. 4,483,420, Cl. 187-31.000.
C. Behrens AG: *See*—
Bredow, Walter, 4,483,523, Cl. 269-60.000.
C. Itoh & Co., Ltd.: *See*—
Uchiyama, Hiroshi, 4,483,956, Cl. 524-384.000.
Cabanaw, Boyd E., to Standard Oil Company (Indiana). System and process for producing elemental sulfur. 4,483,844, Cl. 423-574.00R.
Cable Electric Products, Inc.: *See*—
Schwartz, Frederic W., 4,484,181, Cl. 340-521.000.
Cablecraft, Inc.: *See*—
Hurlow, Robert H., 4,483,211, Cl. 74-473.00R.
Caille Michel, to Laiteries Hubert Triballat. Packaging box for a cheese. 4,483,443, Cl. 206-459.000.
Calder, Oliver J., to Graham, Phyllis. Spray tip. 4,483,481, Cl. 239-119.000.
Caldwell, John T.; Kunz, Walter E.; and Atencio, James D., to United States of America, Energy. Apparatus and method for quantitative assay of generic transuranic wastes from nuclear reactors. 4,483,816, Cl. 376-158.000.
Caldwell, Robert H.; and Scott, Randy J., to Grizzly Corporations. Trencher. 4,483,084, Cl. 37-86.000.
Callaway, Enoch: *See*—
Graham, Martin H.; and Callaway, Enoch, 4,484,035, Cl. 179-84.0VF.
Camana, Peter C.: *See*—
Cornyn, William S., Jr.; Barrett, John S.; Brabston, Donald C., Jr.; Camana, Peter C.; McAferty, James M.; Nelson, Steven P.; and Schy, Stuart T., 4,484,081, Cl. 250-563.000.
Camisa, Alessandro, to F.I.M. s.r.l. Corner shears. 4,483,227, Cl. 83-559.000.
Campbell, Bruce W.: *See*—
Mai, Don L.; and Campbell, Bruce W., 4,484,344, Cl. 381-46.000.
Campbell, Jules D., Jr., to Motorola, Inc. MOS Driver circuit having capacitive voltage boosting. 4,484,092, Cl. 307-578.000.
Campbell, Richard P.: *See*—
Quernemoen, John M.; Voltz, Timothy R.; Campbell, Richard P.; and Kriscunas, Joseph G., 4,484,270, Cl. 364-200.000.
Campbell, Simon F.; and Plews, Rhona M., to Pfizer Inc. 4-Amino-6,7-dimethoxy-2-(4-heteroaryl-piperazino)quinazoline antihypertensives. 4,483,857, Cl. 424-249.000.
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Goodman, William D.; and Sutherland, Dan, 4,483,242, Cl. 99-450.600.
Camus, Jean-Paul: *See*—
Travers, Roger; Camus, Jean-Paul; and Bronner, Jean-Claude, 4,484,048, Cl. 219-10.430.
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Canadian Patents & Development Limited: *See*—
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Cane Harvest, Inc.: *See*—
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Hiramatsu, Akira, 4,483,604, Cl. 354-402.000.
Inoue, Shunzo, 4,484,070, Cl. 250-223.00R.
Kawai, Tohru; Katsuma, Makoto; Murakami, Hiroyasu; Hiramatsu, Akira; and Kaneda, Naoya, 4,484,099, Cl. 310-317.000.
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Ogawa, Kyosuke; Shirai, Shigeru; Kanbe, Junichiro; Saitoh, Keishi; and Osato, Yoichi, 4,483,911, Cl. 430-65.000.
Takada, Yusaku, 4,483,610, Cl. 355-15.000.
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Yokota, Hideo, 4,483,613, Cl. 356-1.000.
Capetrol International, Inc.: *See*—
Garcia, Silverio M., 4,483,887, Cl. 427-436.000.
Capitol Products Corporation: *See*—
Schmidt, Dietrich F., 4,483,099, Cl. 49-63.000.
Capper, Harry M., to AMP Incorporated. Multi-axis force transducer. 4,483,203, Cl. 73-862.040.
Cardenas, Carlos G.; Ho, Tse-Lok; and Liu, Shing-Hou, to SCM Corporation. Process for preparation of arylterpenoid insect maturation inhibitors. 4,484,007, Cl. 568-628.000.
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Collier, William S., Jr.; and Carignan, Lucien, 4,483,255, Cl. 109-66.000.

Carlyle, John L. Gas supply tank lock cap. 4,483,163, Cl. 70-165.000.
Carmichael, Richard W.; Koenig, James P.; and Johnson, Kevin K., to Bendix Corporation, The. Clutch drive. 4,483,430, Cl. 192-91.00A.
Carousel Group, Inc., The: *See*—
Prophet, Wilson B., Jr.; Wolfe, William G.; and Simmons, Thomas J., 4,483,455, Cl. 220-23.830.
Carpenter, Charles R.; Dodge, Robert H.; and Rosanoff, Kenneth A., to AMF Inc. Inactivation of enzymes. 4,483,922, Cl. 435-184.000.
Carper, Jackie D. General purpose breakaway two man hunting blind. 4,483,090, Cl. 43-1.000.
Carr, Albert A.; Farr, Robert A.; and Kane, John M., to Richardson Merrell Inc. Substituted derivatives of 4-t-alkoxycarbonyl-piperazin-2-ones. 4,483,988, Cl. 544-384.000.
Carr, Frederick: *See*—
White, Claude C.; and Carr, Frederick, 4,483,645, Cl. 405-261.000.
Carrier Corporation: *See*—
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Carriveau, Thomas. Fireplace chimney cap and damper combination. 4,483,315, Cl. 126-286.000.
Carter, William A.; and Silver, Gerald. Stabilization and purification of interferon with propylene glycol, resulting in a non-toxic product. 4,483,849, Cl. 424-85.000.
Carver, Robert W. High efficiency, light weight audio amplifier and power supply. 4,484,150, Cl. 330-297.000.
Casey, Francis J.; DePass, Ernest T.; and Gilman, Kevin R., to Enviro-Clear Company, Inc. Fluid film bearing for use in horizontal belt vacuum filters. 4,483,770, Cl. 210-401.000.
Casio Computer Co., Ltd.: *See*—
Uesugi, Yoshinori, 4,484,277, Cl. 364-405.000.
Cason, William C.; Kuecker, Ward A.; and Herrold, Paul R., to International Business Machines Corporation. Single screen display system with multiple virtual display having prioritized service programs and dedicated memory stacks. 4,484,302, Cl. 364-900.000.
Catchpole, Richard J.; Dyke, Peter J.; Farley, Brian S.; and Virdee, Harbhajan S., to International Standard Electric Corporation. Digital transmission systems. 4,484,336, Cl. 375-4.000.
Cavalieri, Michel, to Secalt S.A. Tractive apparatus for hauling a cable, a bar or a similar member. 4,483,517, Cl. 254-254.000.
Cavil, David T.; and Krueger, William R., to Outboard Marine Corporation. Linear power assist mechanism. 4,483,682, Cl. 440-53.000.
Celanese Corporation: *See*—
Christiansen, John; and Lu, Shau-Zou, 4,483,955, Cl. 524-293.000.
Conciatori, Anthony B.; Choe, Eui W.; and Hall, Henry K., Jr., 4,483,977, Cl. 528-342.000.
Eickman, Nancy C.; Fabisiak, Walter; and Dix, Robert, 4,483,727, Cl. 156-181.000.
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CEM Compagnie Electro-Mecanique: *See*—
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Centre Electronique Horloger S.A.: *See*—
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Khanna, Amarpal S.; Guillon, Pierre; and Garault, Yves, 4,484,156, Cl. 331-60.000.
Centre National d'Etudes Spatiales: *See*—
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Centrol-Morgardshammer GmbH: *See*—
Jahr, Alfred; and Svihel, Wilhelm, 4,483,169, Cl. 72-250.000.
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Kahl, William G., Jr.; and Baldwin, John, 4,484,075, Cl. 250-342.000.
Cerny, Daryl D., to Ball Corporation. Multilayered tube having a barrier layer. 4,483,891, Cl. 428-35.000.
Cerwin, Robert J.; and Marziaz, Richard D., to Ethicon, Inc. Suture retainer. 4,483,437, Cl. 206-63.300.
Cesar, Jean, to National Equipment RX. Tilting table X-ray apparatus. 4,484,343, Cl. 378-196.000.
Cesare Bonetti S.p.A.: *See*—
Bonetti, Giulio, 4,483,193, Cl. 73-313.000.
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Barth, Tomislav; Jost, Karel; Lebl, Michal; Machova , Alena; Servitova , Linda; and Slaninova, Jirina, 4,483,794, Cl. 260-112.50R.
Chabrerie, Jean P.; Barthelemy, Jacques C.; and Amiet, Michel L., to Etat Francais. Sliding electrical contacts for electric machinery. 4,483,574, Cl. 339-5.00L.
Chait, Edward M.; Gianelli, Mary L.; and Johnson, Donald R., to Du Pont de Nemours, E. I., and Company. Method and device for electrophoresis. 4,483,885, Cl. 427-58.000.
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Deere & Company: *See—*
Coeffic, Jean-Pierre, 4,483,247, Cl. 100-88.000.
Couturier, Jean-Maurice, 4,483,412, Cl. 181-204.000.
Donnerstag, Hans; and Donnerstag, Werner, 4,483,285, Cl. 123-179.00H.
Hawkins, Robert W., 4,483,128, Cl. 56-11.100.
Head, Glenn D., Jr., 4,483,132, Cl. 56-50.000.
Ludwig, Dieter, 4,483,555, Cl. 285-169.000.
Schlueter, Francis E., 4,483,131, Cl. 56-15.600.
Shindelar, Aloysius C., 4,483,220, Cl. 81-100.000.
Smith, Joseph J., 4,483,406, Cl. 180-9.500.

Deforeit, Christian J., to Matth. Hohner AG. Switch condition indicator. 4,484,180, Cl. 340-365.00S.

De Groot, Alice A. Training halter for animals. 4,483,275, Cl. 119-130.000.

Deicke, Hanshans-Heinrich: *See—*
Beiermann, Norbert; Scheller, Manfred; Kretschmer, Horst; Noack, Jurgen; Blaschke, Klaus-Dieter; Heinz, Lothar; Gohler, Peter; Schweigel, Hans-Joachim; Deicke, Hanshans-Heinrich; Rudolph, Klaus-Peter; and Flachowsky, Johannes, 4,483,199, Cl. 73-861.040.

Deitch, Earl W. Universal suspensory leg cast and splint support. 4,483,336, Cl. 128-94.000.

de Jong, Eduard; Hapelt, Karl-Heinz; and Knipf, Helmut, to Plate Bonn Gesellschaft mit beschrankter Haftung. Copolyetheresteramides, process for their production and their use for the heat-sealing of textiles. 4,483,975, Cl. 528-288.000.

Del Mar Avionics: *See—*
Wong, Alan S., 4,483,347, Cl. 128-712.000.

de Leeuwe, Marc; and Beitel, Jeffrey S., to Union Carbide Corporation. Non-glass chemical container. 4,484,351, Cl. 383-9.000.

Delfino, Allan B.: *See—*
McTamaney, Louis S.; Delfino, Allan B.; and Bisbee, Gary W., 4,483,188, Cl. 73-151.000.

Delhay, Jean-Paul; Dumas, Daniel; and Lacroix, Paul, to Societe des Electrodes et Refractaires. Synthetic carbonaceous granules having high mechanical characteristics. 4,483,840, Cl. 423-445.000.

Dempsey, Donald J.: *See—*
Szycher, Michael; Dempsey, Donald J.; and Rolfe, Jonathan L., 4,483,759, Cl. 204-159.240.

Demuth, Hans, to Sulzer Brothers, Ltd. Tensioning apparatus for a whip roll of a weaving machine. 4,483,372, Cl. 139-114.000.

Denka Consultant & Engineering Co., Ltd.: *See—*
Moriyama, Takashi, 4,483,646, Cl. 406-14.000.

Dennis, John R., to Halliburton Company. System for measuring shear wave travel times. 4,484,313, Cl. 367-27.000.

den Otter, Johan L., to Nederlandse Centrale Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek. Method and device for preparing a fluid hydrocarbon product from coal. 4,483,257, Cl. 110-218.000.

Denso-Chemie Wedekind KG: *See—*
Faerber, Peter; Weingarten, Hans-Theo; Rosgen, Rudolf; and Wedekind, Benno, 4,483,544, Cl. 277-207.00A.

DePass, Ernest T.: *See—*
Casey, Francis J.; DePass, Ernest T.; and Gilman, Kevin R., 4,483,770, Cl. 210-401.000.

Der, Bruce: *See—*
Parkinson, John R.; Fuller, Richard E.; and Der, Bruce, 4,483,740, Cl. 159-47.300.

Derndinger, Walter: *See—*
Beyer, Johann; and Derndinger, Walter, 4,483,343, Cl. 128-660.000.

de Ronde, Frans C., to U.S. Philips Corporation. Arrangement for biasing high-frequency active components. 4,484,163, Cl. 333-247.000.

Derr, Paul B.; Paullus, Clarence L.; and Shaffer, Howard R., to AMP Incorporated. Electrical connector having improved coupling ring. 4,483,579, Cl. 339-90.00R.

Despotakis, John A.: *See—*
Katzman, James A.; Bartlett, Joel F.; Bixler, Richard M.; Davidow, William H.; Despotakis, John A.; Graziano, Peter J.; Green, Michael D.; Greig, David A.; Hayashi, Steven J.; Mackie, David R.; McEvoy, Dennis L.; Treybig, James G.; and Wierenga, Steven W., 4,484,275, Cl. 364-200.000.

Desyatov, Alexandr T.: *See—*
Arkharov, Alexei M.; Desyatov, Alexandr T.; Bondarenko, Vitaly L.; Pronko, Vladimir G.; Krakovsky, Boris D.; Korsakov-Bogatkov, Sergei M.; Jushin, Viktor P.; Kopova, Alexandra M.; Gorodnov, Petr V.; Borisov, Julian Y.; Ermilov, Vadim V.; and Romanteev, Jury P., 4,483,158, Cl. 62-402.000.

Dettmer, Jay R., to Sperry Corporation. Memoryless artificial horizon generator. 4,484,189, Cl. 340-723.000.

Develle, Guy; and Regnier, Alain, to Sofiltra-Poelman. Shelter pressurization and filter installation. 4,483,273, Cl. 109-1.00S.

Devenyi, Tibor F.; and Turlik, Iwona, to Northern Telecom Limited. Gas seal for semiconductor processing equipment. 4,483,541, Cl. 277-3.000.

deVersterre, William I.; and Worden, Donald A., to Marotta Scientific Controls, Inc. Load-transfer mechanism. 4,484,285, Cl. 364-472.000.

Devyatkin, Vladimir N.: *See—*
Zabelin, Igor V.; Ryabukhin, Jury M.; Baibekov, Murat K.; Devyatkin, Vladimir N.; Kitaigorodsky, Efim A.; Kolomiitsev, Arnold V.; Sorokous, Viktor G.; Chalabaev, Ilias A.; Zuev, Nikolai M.; Medeuov, Chaken K.; Chesnokov, Alexandr S.; Usenov, Seisanbai; Tsidrintsev, Grigory V.; Nikolaev, Mikhail M.; Kolyadzin, Alexandr A.; Smorgunov, Boris A.; Chalov, Alexandr V.; Asafiev, Viktor V.; Ladaria, Oleg V.; Vukolov, Vladimir V.; Sabirov, Khamat K.; and Ivakhno, Fedor A., 4,483,753, Cl. 204-70.000.

Dewey, Keith L.; and Varrasso, Eugene C., to Owens-Corning Fiberglas Corporation. Isothermal panel assembly for terminating a plurality of thermocouple leads. 4,483,632, Cl. 374-182.000.

de Witt, Paolo: *See—*
Tinti, Maria O.; Quaresima, Emma; and de Witt, Paolo, 4,483,869, Cl. 424-301.000.

Deysson, Jean-Yves J.; and Potiron, Andre P. L., to Bertin & Cie. Compact gas liquid separator. 4,483,697, Cl. 55-205.000.

Diamond, Julius, to Key Pharmaceuticals, Inc. Systemic treatment of psoriasis using certain salicylates. 4,483,854, Cl. 424-230.000.

Dibbern, John E., Jr.: *See—*
Sauerwein, William D.; Dibbern, John E., Jr.; O'Hara, Frank J.; and Moores, Robert G., Jr., 4,484,096, Cl. 310-260.000.

Diem, Hans: *See—*
Frey, Werner U.; Rometsch, Johannes; and Diem, Hans, 4,483,634, Cl. 400-489.000.

Dierkes, Heribert: *See—*
Minning, Rudolf; Dierkes, Heribert; Korner, Jorg-Peter; and Saamer, Peter, 4,483,458, Cl. 220-320.000.

Dieter, Glaser, to Peg Perego-Pines Deutschland GmbH. Locking device for trailing wheels of a wheeled carriage. 4,483,042, Cl. 16-35.00R.

Dietrich, Hermann; Nosges, Hans J.; and Band, Gerhard, to Mauser-Werke Oberndorf GmbH. Spindle drive for measuring devices and coordinate measuring centers. 4,483,209, Cl. 74-89.150.

Dieu, Lloyd F., to United States of America, Navy. Battery scanning system. 4,484,140, Cl. 324-434.000.

Digital Equipment Corp.: *See—*
Rub, Bernardo; and Field, Norman A., 4,484,142, Cl. 328-155.000.

Diller, Isaac M. Product for the activation of an electrolytic cell. 4,483,935, Cl. 501-151.000.

Dillon, Benny N.: *See—*
Weihs, Frederick H., 4,483,404, Cl. 177-255.000.

Dillow, Harry M.; Sansone, Anthony E.; and Swartz, Raymond K., to AT&T Technologies, Inc. Methods of making a compositely insulated conductor having a layer of irradiation cross-linked polymeric material. 4,483,808, Cl. 264-22.000.

Dinh, Khanh, to Pulstar Corporation. Solar power supply for load requiring high starting current. 4,483,319, Cl. 126-417.000.

Dinh, Tri-Trong. Cooking utensil for deep fat frying of food items. 4,483,240, Cl. 99-407.000.

Disston, Horace C.; and Eichfeld, Timothy J. Folding stepladder. 4,483,415, Cl. 182-22.000.

Disteldorf, Josef; Gras, Rainer; Hubel, Werner; Wolf, Elmar; and Schnurbusch, Horst, to Chemische Werke Huls Aktiengesellschaft. Polyaddition products containing uretidione groups and process for their preparation. 4,483,798, Cl. 260-239.00A.

Dix, Robert: *See—*
Eickman, Nancy C.; Fabisiak, Walter; and Dix, Robert, 4,483,727, Cl. 156-181.000.

Doane, William M.: *See—*
Fanta, George F.; Doane, William M.; and Stout, Edward I., 4,483,950, Cl. 524-48.000.

Dr. Ing. Rudolf Hell GmbH: *See—*
Gast, Uwe, 4,484,232, Cl. 358-299.000.

Dodge, Donald E., Jr.: *See—*
Quatse, Jesse T.; Dodge, Donald E., Jr.; and Dove, Richard K., 4,484,307, Cl. 364-900.000.

Dodge, Robert H.: *See—*
Carpenter, Charles R.; Dodge, Robert H.; and Rosanoff, Kenneth A., 4,483,922, Cl. 435-184.000.

Dohle, Gunter; Kolax, Michael; and Hertel, Wolfgang, to Vereinigte Flugtechnische Werke GmbH. Method for producing a tubular load-bearing hollow. 4,483,731, Cl. 156-245.000.

Doi, Haruo: *See—*
Sugiura, Masahiro; Kandori, Toshio; and Doi, Haruo, 4,483,839, Cl. 423-344.000.

Dolder, Michael J.: *See—*
Laseman, Lynn F.; Poulos, Sam; and Dolder, Michael J., 4,483,531, Cl. 272-65.000.

Dominianni, Samuel J., to Eli Lilly and Company. 4-Nitrobenzophenone compounds. 4,483,986, Cl. 544-159.000.

Donnerstag, Hans; and Donnerstag, Werner, to Deere & Company. Diesel engine cold starting arrangement. 4,483,285, Cl. 123-179.00H.

Donnerstag, Werner: *See—*
Donnerstag, Hans; and Donnerstag, Werner, 4,483,285, Cl. 123-179.00H.

Dore, Jeffrey C.: *See—*
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Dorfler, Josef: *See—*
Schubert, Ernst W.; and Dorfler, Josef, 4,483,666, Cl. 418-45.000.

Dorma-Baubechlag GmbH & Co. KG: *See—*
Tillmann, Horst, 4,483,043, Cl. 16-56.000.

Dorman-Bogdonoff Corp.: *See—*
Dorman, William E.; and Brown, Gary, 4,484,038, Cl. 200-5.00A.

Dorman, William E.; and Brown, Gary, to Dorman-Bogdonoff Corp. Membrane touch panel having improved conductor construction. 4,484,038, Cl. 200-5.00A.

Dornier System GmbH: *See—*
Neumann, Gerhard, 4,484,095, Cl. 310-49.00R.

Doronin, Valentin N.: *See—*
Adadurov, Gennady A.; Bavina, Tamara V.; Breusov, Oleg N.; Drobyshev, Viktor N.; Messinev, Mikhail J.; Rogacheva, Alexandra I.; Ananiin, Alexandr V.; Apollonov, Vladimir N.; Dremin, Anatoly N.; Doronin, Valentin N.; Dubovitsky, Fedor I.; Zemlyakova, Lidia G.; Pershin, Sergei V.; and Tatsy, Viktor F., 4,483,836, Cl. 423-290.000.

Dorreich, Kurt A., to Novo Industri A/S. Enzymatic treatment of pomace. 4,483,875, Cl. 426-52.000.

Dorscht, John P. W., to Versatile Corporation. Independent telescopic suspension. 4,483,552, Cl. 280-690.000.

Doswald, Paul; Moriconi, Emil; Moser, Helmut; and Schmid, Horst, to Sandoz Ltd. Sulfo group-free disazo and polyazo compounds containing two 1-phenylpyrazol-5-one coupling component radicals and at least two basic or cationic groups. 4,483,796, Cl. 534-604.000.

Dove, Richard K.: *See—*
Quatse, Jesse T.; Dodge, Donald E., Jr.; and Dove, Richard K., 4,484,307, Cl. 364-900.000.

Dovgodko, Evgeny I.: *See—*
Podola, Nikolai V.; Krivonos, Vadim P.; Grabchev, Boris L.; Dovgodko, Evgeny I.; and Kobylin, Alexandr M., 4,484,057, Cl. 219-109.000.

Dow Chemical Company, The: *See—*
Archer, Wesley L.; Dallessandro, Susan M.; and Lynn, Vicki A., 4,483,917, Cl. 430-329.000.
Flagg, Edward E., 4,483,984, Cl. 544-85.000.
Maschmeyer, Donald M.; Fowler, Allan E.; Sims, Steve A.; and White, G. Eldon, 4,484,016, Cl. 585-510.000.
Porter, James R.; and Jenkines, Randall C., 4,483,894, Cl. 428-95.000.

Dowling, Terence: *See—*
Olson, David E.; Simpson, Peter E.; Melden, Kurt A.; and Dowling, Terence, 4,484,263, Cl. 364-200.000.

Down, William H., to Electrovert, Ltd. Fixture for use in fluxing, solder coating and hot air levelling. 4,483,269, Cl. 118-503.000.

Doyle, Stephen D.: *See—*
Bulso, Joseph D., Jr.; Doyle, Stephen D.; and McClung, James A., 4,483,172, Cl. 72-349.000.

Draftex Development A.G.: *See—*
Kruschwitz, Werner, 4,483,113, Cl. 52-208.000.

Dragone, Corrado, to AT&T Bell Laboratories. Multibeam antenna arrangement with minimal astigmatism and coma. 4,484,197, Cl. 343-781.00P.

Drake, Brian J.: *See—*
Christenson, Philip A.; Drake, Brian J.; and Willis, Brian J., 4,483,786, Cl. 252-522.00R.

Drapeau, Donald F., to United States of America, National Aeronautics and Space Administration. Slow opening valve. 4,483,512, Cl. 251-265.000.

Dremin, Anatoly N.: *See—*
Adadurov, Gennady A.; Bavina, Tamara V.; Breusov, Oleg N.; Drobyshev, Viktor N.; Messinev, Mikhail J.; Rogacheva, Alexandra I.; Ananiin, Alexandr V.; Apollonov, Vladimir N.; Dremin, Anatoly N.; Doronin, Valentin N.; Dubovitsky, Fedor I.;

Zemlyakova, Lidia G.; Pershin, Sergei V.; and Tatsy, Viktor F., 4,483,836, Cl. 423-290.000.

Dresser Industries, Inc.: *See—*
Jobbagy, Francis M., 4,484,177, Cl. 340-347.0NT.
Peppers, James M.; and Shaikh, Farhat A., 4,483,394, Cl. 166-113.000.

Drobyshev, Viktor N.: *See—*
Adadurov, Gennady A.; Bavina, Tamara V.; Breusov, Oleg N.; Drobyshev, Viktor N.; Messinev, Mikhail J.; Rogacheva, Alexandra I.; Ananiin, Alexandr V.; Apollonov, Vladimir N.; Dremin, Anatoly N.; Doronin, Valentin N.; Dubovitsky, Fedor I.; Zemlyakova, Lidia G.; Pershin, Sergei V.; and Tatsy, Viktor F., 4,483,836, Cl. 423-290.000.

Drottar, Emil P.: *See—*
Provanzano, Salvatore R.; Aldrich, Wilbert H.; D'Angelo, Robert A.; Drottar, Emil P.; Finnegan, John J., Jr.; Heom, James; Hill, Lawrence W.; Malcolm, Ronald D.; Nollet, Michael C.; Perlman, Baruch S.; Tressler, Michael B.; Van Schalkwyk, John E.; and Webb, Kincade N., 4,484,303, Cl. 364-900.000.

Dubbe, Ronald F. Trailer hitch pin. 4,483,550, Cl. 280-515.000.

Dubel, Jurgen: *See—*
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Dubovitsky, Fedor I.: *See—*
Adadurov, Gennady A.; Bavina, Tamara V.; Breusov, Oleg N.; Drobyshev, Viktor N.; Messinev, Mikhail J.; Rogacheva, Alexandra I.; Ananiin, Alexandr V.; Apollonov, Vladimir N.; Dremin, Anatoly N.; Doronin, Valentin N.; Dubovitsky, Fedor I.; Zemlyakova, Lidia G.; Pershin, Sergei V.; and Tatsy, Viktor F., 4,483,836, Cl. 423-290.000.

Duhamel, Gerard, to Societe Nationale Industrielle Aerospatiale. Device for the automatic regulation of the push rods of a stamping press. 4,483,173, Cl. 72-351.000.

Dulux Australia Ltd.: *See—*
Beresford, Michael P.; Potter, Susan E.; and Ritchie, Philip J. A., 4,483,945, Cl. 521-62.000.

Dumas, Daniel: *See—*
Delhay, Jean-Paul; Dumas, Daniel; and Lacroix, Paul, 4,483,840, Cl. 423-445.000.

Dumbaugh, William H., Jr.; and Tyndell, Brian P., to Corning Glass Works. Lead gallate glasses. 4,483,931, Cl. 501-41.000.

Duncan, Richard A., to Cane Harvest, Inc. Associated running gear and piler improvements in a two row harvester and piler. 4,483,130, Cl. 56-14.300.

Dunn, Anthony G., to Cittadine, Jack P., a part interest. Projectile proof vest. 4,483,020, Cl. 2-2.500.

Dunnavant, William R.: *See—*
Koch, Diether; Gruber, Bruce A.; Langer, Heimo J.; and Dunnavant, William R., 4,483,961, Cl. 524-542.000.

Dunphy, Gerald F.; and Esser, Hans J., to Ogden Industries Pty. Ltd. Locking mechanism. 4,483,162, Cl. 70-134.000.

Du Pont de Nemours, E. I., and Company: *See—*
Chait, Edward M.; Gianelli, Mary L.; and Johnson, Donald R., 4,483,885, Cl. 427-58.000.
Rees, Richard W., 4,483,938, Cl. 502-113.000.

Duracell Inc.: *See—*
Klein, Gerhart P., 4,483,909, Cl. 429-94.000.

Duwelshoft, Helmut, to P. A. Rentrop Hubbert & Wagner Fahrzeugausstattunger GmbH & Co. KG. Slide rail assemblies. 4,483,504, Cl. 248-429.000.

Dyett, Derek H.; and Horsley, John K., to Molins Limited. Filter cigarette making machine. 4,483,349, Cl. 131-94.000.

Dyke, Peter J.: *See—*
Catchpole, Richard J.; Dyke, Peter J.; Farley, Brian S.; and Virdee, Harbhajan S., 4,484,336, Cl. 375-4.000.

Dziark, John J.: *See—*
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E.C. Chemical Ind. Co., Ltd.: *See—*
Uchiyama, Hiroshi, 4,483,952, Cl. 524-108.000.
Uchiyama, Hiroshi, 4,483,956, Cl. 524-384.000.

E. H. Wachs Company, The: *See—*
Wachs, Edward H.; and Johansson, Ingval, 4,483,106, Cl. 51-241.00S.

E. R. Squibb & Sons, Inc.: *See—*
Floyd, David; and Cimarusti, Christopher M., 4,483,797, Cl. 260-239.00A.

E-Systems, Inc.: *See—*
Mosley, William H.; and Sanders, David E., 4,484,335, Cl. 375-1.000.

Easter, James M., II. Method for composting sludge. 4,483,704, Cl. 71-9.000.

Eastern Company, The: *See—*
Pastva, John V., 4,483,557, Cl. 292-218.000.

Eastman Kodak Company: *See—*
Joyner, Frederick B.; Trotter, Jimmy R.; and McConnell, Richard L., 4,483,969, Cl. 525-437.000.
Van Sickle, Dale E., 4,484,011, Cl. 568-781.000.

Eaton Corporation: *See—*
Clark, David P., 4,483,507, Cl. 251-58.000.

Eaton, David L.; and Vann, William P., to Corning Glass Works. Magnetic stirring apparatus. 4,483,623, Cl. 366-247.000.

Ebbs, John W., to Rotron, Incorporated. Self-starting brushless DC motor. 4,484,114, Cl. 318-138.000.

Ebisu, Tomio: *See—*
Yamamoto, Masahiko; Nishino, Yoshinori; Komura, Akio; and Ebisu, Tomio, 4,483,670, Cl. 425-324.100.

Echlin Manufacturing Company: *See—*
Wiegand, John R.; and Opie, John E., 4,484,090, Cl. 307-419.000.

Eckold, Gerd-Jurgen; and Maass, Hans, to Walter Eckold GmbH & Co. Clamping device for tubes to be welded together. 4,483,477, Cl. 228-42.000.

Economics Laboratory, Inc.: *See—*
Maloney, James E.; and McDonell, James A., 4,483,741, Cl. 162-5.000.

Eddy, Tillman L., to Wright, Christopher D.; O'Hara, Bernard F.; and O'Hara, Michael L. Holster holder. 4,483,501, Cl. 248-205.100.

Edelstein, William A.: *See—*
Bottomley, Paul A.; and Edelstein, William A., 4,484,138, Cl. 324-307.000.

Eden, Gerhard: *See—*
Kunze, Siegmar; Eden, Gerhard; and Koster, Rainer, 4,483,789, Cl. 252-628.000.

Eder, Franz X. Planar detector of a device for detecting corpuscular or electromagnetic radiation, and method for manufacturing same. 4,484,074, Cl. 250-336.100.

Edmonds, Albert V.: *See—*
Whittenburg, Stephen L.; Aberer, James B.; Edmonds, Albert V.; Yang, Ching-Wen; Streck, Vernon W.; Rodick, Vernon F.; and Enoch, Robert C., 4,484,063, Cl. 219-400.000.

Edmundson, Henry N., to Schlumberger Technology Corporation. Well logging: utilizing superposition of step-profile responses of logging tools to improve logs. 4,484,278, Cl. 364-422.000.

Edwards, James D. Removable louver covering system. 4,483,102, Cl. 49-465.000.

Edwards, John C.: *See—*
Becker, Donald L.; and Edwards, John C., 4,484,266, Cl. 364-200.000.

EG&G Sealol GmbH: *See—*
Bordien, Edgar; and Jasch, Hans-Peter, 4,483,540, Cl. 277-2.000.

Egri, Laszlo, to Tamag Basel AG. Method of increasing the volume of cut tobacco ribs and an apparatus for carrying out said method. 4,483,352, Cl. 131-296.000.

Eguchi, Yasuhito, to Sony Corporation. Printing apparatus. 4,484,231, Cl. 358-296.000.

Ebeim, Franz; Hofer, Gerald; Koster, Claus; Konrath, Karl; and Schwarz, Manfred, to Bosch, Robert. Fuel injection pump for internal combustion engines. 4,483,297, Cl. 123-449.000.

Eichelberger, Charles W.: *See—*
Bedard, James F.; Eichelberger, Charles W.; and Nati, Salvator F., Jr., 4,484,295, Cl. 364-607.000.
Miller, Edward B.; and Eichelberger, Charles W., 4,484,258, Cl. 364-141.000.

Eichfeld, Timothy J.: *See—*
Disston, Horace C.; and Eichfeld, Timothy J., 4,483,415, Cl. 182-22.000.

Eickhoff, David J.; and Robbins, Medford D., to Procter & Gamble Company, The. Method of catalyzing oxygen-initiated free-radical polymerization and catalysts used therein. 4,483,967, Cl. 525-370.000.

Eickman, Nancy C.; Fabisiak, Walter; and Dix, Robert, to Celanese Corporation. High modulus polyethylene fiber bundles as reinforcement for brittle matrices. 4,483,727, Cl. 156-181.000.

Eidschun, Harry L.; and Montemayor, Wilfred E., to FMC Corporation. Closed loop processing of materials. 4,483,271, Cl. 118-698.000.

Eilentropp, Heinz, to HEW-Kabel, Heinz Eilentropp KG. Method of making tensile-, pressure-, and moisture-proof connections. 4,484,022, Cl. 174-84.00R.

Eilingsfeld, Heinz; Hansen, Guenter; Seybold, Guenther; and Zeidler, Georg, to BASF Aktiengesellschaft. Substituted phenyl disazo dyes containing a 2-amino-substituted thiazole radical. 4,483,795, Cl. 534-756.000.

Eisai Co., Ltd.: *See—*
Ohashi, Hiroyuki; Takami, Toru; Koyama, Noritoshi; Kogure, Yoshio; and Ida, Katsumi, 4,483,873, Cl. 424-331.000.

Eisemann, Kurt. Disc player for a rigid information-carrying disc. 4,484,321, Cl. 369-270.000.

Eklund, Nils; and Huang, Jen-chi, to Polychrome Corporation. Planographic printing plate. 4,483,913, Cl. 430-160.000.

Electronique Marcel Dassault: *See—*
Geesen, Michel; Mourant, Jacques; and Ludwig, Daniel P., 4,484,356, Cl. 455-165.000.

Electrovert, Ltd.: *See—*
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Eli Lilly and Company: *See—*
Dominianni, Samuel J., 4,483,986, Cl. 544-159.000.

Ellicott, Harold B.; and Frank, James P., to General Electric Company. Prime mover and method of operating an electrical switch. 4,484,116, Cl. 318-325.000.

Ellingson, David I., to Maytag Company, The. Single relay for motor and heater control. 4,483,082, Cl. 34-44.000.

Elring Dichtungswerke GmbH: *See—*
Bindel, Rudolf; and Ruoff, Eugen, 4,483,539, Cl. 277-1.000.

Elser, Dieter, to Zahnradfabrik Friedrichshafen, AG. Steering gear with auxiliary power support. 4,483,237, Cl. 91-368.000.

Eltech Systems Corporation: *See—*
Kline, George A., 4,483,752, Cl. 204-64.00T.

Emerson Electric Co.: *See—*
Moore, Robert J., 4,483,069, Cl. 30-276.000.

Emerson, Ralph W., Sr., to Plasmine Corporation, The. Sizing agents for cellulosic products. 4,483,744, Cl. 162-180.000.

Emhart Industries, Inc.: *See—*
Wagle, William E., 4,484,040, Cl. 200-38.00R.
Wallace, George E., 4,483,153, Cl. 62-256.000.

Emmel, Henry J., to Bausch & Lomb Incorporated. Indexing mechanism for rotatable nosepiece of a microscope. 4,483,589, Cl. 350-254.000.

Endoh, Koichi: *See*—
Tsuji, Nobuhiko; Nakamura, Keijiroh; Endoh, Koichi; Hamada, Toshiyoshi; and Ishida, Keiichi, 4,483,924, Cl. 435-288.000.

Energy Conversion Devices, Inc.: *See*—
Nath, Prem; and Izu, Masatsugu, 4,483,883, Cl. 427-39.000.

Engeler, William E.: *See*—
Mazin, Moshe; and Engeler, William E., 4,484,087, Cl. 307-272.00A.
Mazin, Moshe; and Engeler, William E., 4,484,088, Cl. 307-279.000.

Engelhard Corporation: *See*—
McShea, William T., III; and Yarrington, Robert M., 4,483,691, Cl. 48-202.000.

Engl, Ernst, to Messerschmitt-Bolkow-Blohm GmbH. Valve construction particularly for ram jet rocket engines and to a ram jet rocket engine construction. 4,483,139, Cl. 60-251.000.

English Clays Lovering Pochin & Co., Ltd.: *See*—
Goodman, Howard; and Bleakley, Ian S., 4,483,934, Cl. 501-147.000.

Engmann, Gunther; Hagen, Werner; and Heider, Hermann, to Maschinenfabrik Niehoff KG. Individual coil winder with automatic coil change. 4,483,490, Cl. 242-25.00R.

Engstrom, Ulf F. I., to Hoganas AG. Homogeneous iron based powder mixtures free of segregation. 4,483,905, Cl. 428-570.000.

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Whittenburg, Stephen L.; Aberer, James B.; Edmonds, Albert V.; Yang, Ching-Wen; Streck, Vernon W.; Rodick, Vernon F.; and Enoch, Robert C., 4,484,063, Cl. 219-400.000.

Enviro-Clear Company, Inc.: *See*—
Casey, Francis J.; DePass, Ernest T.; and Gilman, Kevin R., 4,483,770, Cl. 210-401.000.

Environmental Research Institute of Michigan: *See*—
McCubbrey, David L., 4,484,349, Cl. 382-49.000.

Epstein, Harold M.: *See*—
Mallozzi, Philip J.; and Epstein, Harold M., 4,484,339, Cl. 378-82.000.

Ercole, Maurizio: *See*—
Mimucciani, Giorgio; and Ercole, Maurizio, 4,484,293, Cl. 364-513.000.

Erect-A-Tube, Inc.: *See*—
Shelton, Kenneth B.; Herkert, Klaus H.; and Twedt, Lynn O., 4,483,045, Cl. 16-95.00R.

Erickson, Roy O.: *See*—
Marsh, Keith D.; and Erickson, Roy O., 4,483,508, Cl. 251-61.300.

Ermilov, Vadim V.: *See*—
Arkharov, Alexei M.; Desyatov, Alexandr T.; Bondarenko, Vitaly L.; Pronko, Vladimir G.; Krakovsky, Boris D.; Korsakov-Bogatkov, Sergei M.; Juhin, Viktor P.; Kopova, Alexandra M.; Gorodnov, Petr V.; Borisov, Julian Y.; Ermilov, Vadim V.; and Romanteev, Jury P., 4,483,158, Cl. 62-402.000.

Ernst, Manfred. Splash guard ring for pipe flanges. 4,483,554, Cl. 285-45.000.

Esser, Hans J.: *See*—
Dunphy, Gerald F.; and Esser, Hans J., 4,483,162, Cl. 70-134.000.

Essex Group, Inc.: *See*—
Wallace, Elmer E.; and Turner, Jesse H., 4,483,672, Cl. 431-20.000.

Estevez, Orestes. Heater structure. 4,484,062, Cl. 219-309.000.

ETA S.A., Fabriques d'Ebauches: *See*—
Muller, Jacques; and Schaffner, Jean-Claude, 4,483,627, Cl. 368-76.000.

Etat Francais: *See*—
Chabrerie, Jean P.; Barthelemy, Jacques C.; and Amiet, Michel L., 4,483,574, Cl. 339-5.00L.

Ethicon, Inc.: *See*—
Cerwin, Robert J.; and Marziaz, Richard D., 4,483,437, Cl. 206-63.300.

Ethyl Corporation: *See*—
Everly, Charles R.; and Robinson, Gene C., 4,483,800, Cl. 260-465.00F.
Semen, John; Jones, Jesse D.; and Hornbaker, Edwin D., 4,483,949, Cl. 523-514.000.
Siemion, Chester C., 4,483,374, Cl. 141-9.000.

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Tagawa, Kengo; Nasu, Toshio; Yamada, Takao; Yamashita, Kazuo; and Eto, Tetsuo, 4,483,426, Cl. 188-378.000.

Evans, Hugh G.; Speer, Stephen; and Christy, James A. Turbocharged engine having an engine speed and throttle position responsive compressor bleed valve. 4,483,147, Cl. 60-611.000.

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Seitz, William R.; Farrah, Harry R.; Brumm, Gerald A.; Evans, Lansing B.; and Walter, Chris J., 4,484,192, Cl. 340-995.000.

Evans, Larry G.; and Trombka, Jacob I., to United States of America, National Aeronautics and Space Administration. Method and apparatus for mapping the distribution of chemical elements in an extended medium. 4,483,817, Cl. 376-159.000.

Evans, Morris L.: *See*—
Agarwal, Pawan K.; Turner, S. Richard; Lundberg, Robert D.; and Evans, Morris L., 4,483,960, Cl. 524-499.000.

Everett, Charles J., to Robertshaw Controls Company. Pressure transducer device using Hall elements. 4,484,173, Cl. 338-42.000.

Everett, Chauncey L.; Houston, Theodore W.; and Darley, Henry M., to Texas Instruments Incorporated. Static noninverting memory cell for one propagation delay memory circuits. 4,484,310, Cl. 365-174.000.

Everly, Charles R.; and Robinson, Gene C., to Ethyl Corporation. Preparation of 4-(α-alkyl-α-cyano-methyl)-2,6-di-substituted phenols. 4,483,800, Cl. 260-465.00F.

Ewing, John J.: *See*—
Frank, Robert G.; and Ewing, John J., 4,483,702, Cl. 65-273.000.

Exide Electronics Corporation: *See*—
Kulczyckyj, Antin U.; and Goszyk, Kurt A., 4,484,306, Cl. 364-900.000.

Exploration Logging, Inc.: *See*—
More, Henry S.; and Koch, Christopher E., 4,483,393, Cl. 166-65.00R.

Exxon Production Research Co.: *See*—
Mifsud, Joseph F., 4,483,411, Cl. 181-120.000.
Peters, Greg G.; and West, Robert C., 4,483,398, Cl. 166-259.000.

Exxon Research & Engineering Co.: *See*—
Agarwal, Pawan K.; Turner, S. Richard; Lundberg, Robert D.; and Evans, Morris L., 4,483,960, Cl. 524-499.000.
Kowalski, Ronald C., 4,483,886, Cl. 427-213.000.
Liu, Huei-Cheng; and Spohn, Ralph J., 4,483,936, Cl. 502-74.000.
Liu, Huei-Cheng, 4,483,937, Cl. 502-73.000.
Lundberg, Robert D.; and Phillips, Robert R., 4,483,957, Cl. 524-390.000.
Stogryn, Eugene L.; Savage, David W.; and Sartori, Guido, 4,483,833, Cl. 423-228.000.

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Kruger, Manfred; and Schulte Strathaus, Franz E., 4,483,575, Cl. 339-14.00P.

F.I.M. s.r.l.: *See*—
Camisa, Alessandro, 4,483,227, Cl. 83-559.000.

f.m.e. Corporation: *See*—
Quatse, Jesse T.; Dodge, Donald E., Jr.; and Dove, Richard K., 4,484,307, Cl. 364-900.000.

Faber, Tom: *See*—
Kosner, Jerry J., Jr.; Wisniewski, Michael; and Faber, Tom, 4,483,633, Cl. 400-82.000.

Fabisiak, Walter: *See*—
Eickman, Nancy C.; Fabisiak, Walter; and Dix, Robert, 4,483,727, Cl. 156-181.000.

Facon, Michel; and Julien, Robert, to Thomson CSF Telephone. Protection device for the horizontal scanning control of a display screen. 4,484,112, Cl. 315-399.000.

Faerber, Peter; Weingarten, Hans-Theo; Rosgen, Rudolf; and Wedekind, Benno, to Denso-Chemie Wedekind KG. Socket pipe seal for concrete pipes. 4,483,544, Cl. 277-207.00A.

Fairchild Camera & Instrument Crop.: *See*—
Herndon, William H., 4,484,311, Cl. 365-190.000.

Fairfield, Michael J.: *See*—
Clark, Adrian P.; and Fairfield, Michael J., 4,484,338, Cl. 375-94.000.

Fallier, Charles N., Jr.; and Proud, Joseph M., to GTE Laboratories Incorporated. Spiral line voltage pulse generator characterized by secondary winding. 4,484,085, Cl. 307-106.000.

Fallon, Gerald J., to Basso, Louis G., Jr. Interlocking modular valve mounting assembly. 4,483,365, Cl. 137-343.000.

Fang, Russell J.: *See*—
Lee, Lin-nan; and Fang, Russell J., 4,484,027, Cl. 178-22.130.

Fanta, George F.; Doane, William M.; and Stout, Edward I., to United States of America, Agriculture. Modified starches as extenders for absorbent polymers. 4,483,950, Cl. 524-48.000.

Farley, Brian S.: *See*—
Catchpole, Richard J.; Dyke, Peter J.; Farley, Brian S.; and Virdee, Harbhajan S., 4,484,336, Cl. 375-4.000.

Farr, Robert A.: *See*—
Carr, Albert A.; Farr, Robert A.; and Kane, John M., 4,483,988, Cl. 544-384.000.

Farrah, Harry R.: *See*—
Seitz, William R.; Farrah, Harry R.; Brumm, Gerald A.; Evans, Lansing B.; and Walter, Chris J., 4,484,192, Cl. 340-995.000.

Farrar, Frank W.; and Cupp, Carl J., to Pachmayr Gun Works, Inc. Gun assembling and disassembling tool. 4,483,060, Cl. 29-278.000.

Fast, Jacob. Support unit for display items. 4,483,502, Cl. 248-222.100.

Fatches, Keith R. Pipette and filter combination. 4,483,825, Cl. 422-100.000.

Faulkner, Robie L., to Solar Turbines, Incorporated. Gas turbine engine construction and operation. 4,483,137, Cl. 60-39.550.

Faulring, Gloria M.; Fitzgibbon, Alan; and Nasiadka, Anthony F., to Union Carbide Corporation. Addition agent for adding vanadium to iron base alloys. 4,483,710, Cl. 75-129.000.

Fedde, Chris S., to Motorola, Inc. Spontaneous channel continuity scanning radio. 4,484,357, Cl. 455-166.000.

Fellows, Mark W.: *See*—
Stupp, Edward H.; Fellows, Mark W.; and Guarnera, Leonard R., 4,484,108, Cl. 315-219.900.

Ferns, Derek, to Selflevel Covers (Jersey) Limited. Methods of installing frames for access pits and manholes. 4,483,110, Cl. 52-20.000.

Ferrante, John V.: *See*—
Maier, James J.; Woodard, Jeffrey P.; Ferrante, John V.; and Heffron, Michael A., 4,484,297, Cl. 364-717.000.

Ferranti plc: *See*—
Bagnall, Jeffrey L.; and Roscoe, Tom, 4,484,290, Cl. 364-483.000.

Ferrieu, Gilbert M. M.; Hamel, Roger B. J.; Lefort, Emmanuel; and Moliere, Francoise, to Telecommunications Radioelectrique et Telephoniques. Anti-larsen-effect arrangement in a telephone station equipped with a loudspeaker. 4,484,034, Cl. 179-81.00B.

Fetters, Wayne A. Baling apparatus. 4,483,245, Cl. 100-7.000.

Fey, Rainer, to Fichtel & Sachs AG. Central locking system. 4,483,410, Cl. 180-281.000.

Fichtel & Sachs AG: *See—*
Fey, Rainer, 4,483,410, Cl. 180-281.000.

Field, Norman A.: *See—*
Rub, Bernardo; and Field, Norman A., 4,484,142, Cl. 328-155.000.

Fields, Robert N.: *See—*
Henke, Steven P.; and Fields, Robert N., 4,484,355, Cl. 455-76.000.

Finnegan, John J., Jr.: *See—*
Provanzano, Salvatore R.; Aldrich, Wilbert H.; D'Angelo, Robert A.; Drottar, Emil P.; Finnegan, John J., Jr.; Heom, James; Hill, Lawrence W.; Malcolm, Ronald D.; Nollet, Michael C.; Perlman, Baruch S.; Tressler, Michael B.; Van Schalkwyk, John E.; and Webb, Kincade N., 4,484,303, Cl. 364-900.000.

Firestone Tire & Rubber Company, The: *See—*
Kelemen, Ladislav, 4,483,424, Cl. 188-196.0BA.

Fischer, Bruno; Andretta, Angelo; and Nussbaumer, Manfred, to Micafil AG. Apparatus for the feeding and removal of workpieces to and from work stations coupled in parallel. 4,483,433, Cl. 198-339.000.

Fischer, William C.: *See—*
Verzella, David J.; Fischer, William C.; Adams, Don L.; Wright, Stuart C.; and Graham, Byron, Jr., 4,484,283, Cl. 364-434.000.

Fisher, Ernest P., Jr.; and Boyle, William G., to Otis Engineering Corporation. Seals. 4,483,543, Cl. 277-188.00R.

Fisher, Glen W., to Technovators, Inc. Continuous solid particulate mixer conveyor having variable capacity. 4,483,625, Cl. 366-297.000.

Fitzgibbon, Alan: *See—*
Faulring, Gloria M.; Fitzgibbon, Alan; and Nasiadka, Anthony F., 4,483,710, Cl. 75-129.000.

Fitzpatrick, William B., to Storage Technology Corporation. Run length limited data encoder. 4,484,176, Cl. 340-347.0DD.

Fives-Cail Babcock: *See—*
Chielens, Alain; Benoit, Philippe; and Roggo, Bernard, 4,483,387, Cl. 164-455.000.

Flachowsky, Johannes: *See—*
Beiermann, Norbert; Scheller, Manfred; Kretschmer, Horst; Noack, Jurgen; Blaschke, Klaus-Dieter; Heinz, Lothar; Gohler, Peter; Schweigel, Hans-Joachim; Deicke, Hanshans-Heinrich; Rudolph, Klaus-Peter; and Flachowsky, Johannes, 4,483,199, Cl. 73-861.040.

Flagg, Edward E., to Dow Chemical Company, The. Phenoxiodinin-5-ium antimicrobial compounds. 4,483,984, Cl. 544-85.000.

Fleming, Harold W.: *See—*
White, Gerald A.; Roszkowski, Theodore R.; and Fleming, Harold W., 4,483,693, Cl. 48-213.000.

Fletcher, Robert P., to International Business Machines Corporation. Cache sharing control in a multiprocessor. 4,484,267, Cl. 364-200.000.

Flick, Roland E.; Wortman, Ronald D.; Fotevski, Krstin; and Whitney, John, to Medisearch PR, Inc. Air pad. 4,483,030, Cl. 5-458.000.

Flottes, Patrick; and Leclerc, Daniel, to U.S. Philips Corporation. Method for controlling the information stream in a cell constituting several radio channels and a device for carrying out this method. 4,484,353, Cl. 455-33.000.

Floyd, David; and Cimarusti, Christopher M., to E. R. Squibb & Sons, Inc. (S)-3-Isocyanato-2-oxo-1-azetidinesulfonic acids. 4,483,797, Cl. 260-239.00A.

FMC Corporation: *See—*
Cook, Richard B.; Saravis, Calvin A.; and Lefferson, Peter, 4,484,141, Cl. 324-464.000.
Cornett, Paul C., 4,483,190, Cl. 73-167.000.
Eidschun, Harry L.; and Montemayor, Wilfred E., 4,483,271, Cl. 118-698.000.
McTamaney, Louis S.; Delfino, Allan B.; and Bisbee, Gary W., 4,483,188, Cl. 73-151.000.
Rosenhouse, Harvey; and Dore, Jeffrey C., 4,483,746, Cl. 203-91.000.
Wittman, Leroy L.; and Jensen, Lyle B., 4,483,448, Cl. 212-189.000.

Fogarty, Thomas J.; and Kinney, Thomas B., to Fogarty, Thomas J. Dilatation catheter. 4,483,340, Cl. 128-344.000.

Fomina, Galina A.: *See—*
Atkov, Oleg J.; Popov, Anatoly V.; Mukharlyamov, Nurmukhamed M.; Baranov, Vladimir F.; Belenkov, Jury N.; Frolov, Alexandr N.; Odintsov, Nikolai G.; and Fomina, Galina A., 4,483,344, Cl. 128-661.000.

Force Control Industries, Inc.: *See—*
Cory, Halsey W., 4,483,422, Cl. 188-71.500.

Ford Aerospace & Communications Corporation: *See—*
Meyer, Theodore O.; and van Ommering, Gerrit, 4,483,065, Cl. 29-623.200.

Ford Motor Company: *See—*
Lewis, Idris; Allen, Roy H.; Roscoe, John E.; Churchill, John I.; and Parkes, Ronald A., 4,483,559, Cl. 293-126.000.

Forker, Ray B., Jr.; and Panzarino, Joseph N., to Corning Glass Works. Chemical strengthening method. 4,483,700, Cl. 65-30.140.

Forkner, Roy C., to Lubbock Interstate Sales Co., Inc. Cotton module cover. 4,483,127, Cl. 53-580.000.

Fory, Werner: *See—*
Breitenstein, Werner; Fory, Werner; Nyfeler, Robert; and Boger, Manfred, 4,483,707, Cl. 71-94.000.

Fossati, Roberto; and Lazzari, Vincenzo, to Cselt Centro Studi E Laboratori Telecomunicazioni S.p.A. Circuit arrangement for suppressing outgoing-signal noises in system for bidirectional transmission of digitized signals over two-wire line. 4,484,322, Cl. 370-32.000.

Fossum, Jerry G.: *See—*
Neugroschel, Arnost; Pao, Shing-Chong; Lindholm, Fred A.; Fossum, Jerry G.; and Sah, Chih-Tang, 4,483,063, Cl. 29-572.000.

Foster Wheeler Energy Corporation: *See—*
Zipay, Albert J.; and Gorzegno, Walter P., 4,483,696, Cl. 55-186.000.

Fotevski, Krstin: *See—*
Flick, Roland E.; Wortman, Ronald D.; Fotevski, Krstin; and Whitney, John, 4,483,030, Cl. 5-458.000.

Fournex, Robert: *See—*
Christidis, Yani; Fournex, Robert; and Tournemine, Colette, 4,483,868, Cl. 424-282.000.

Fowler, Allan E.: *See—*
Maschmeyer, Donald M.; Fowler, Allan E.; Sims, Steve A.; and White, G. Eldon, 4,484,016, Cl. 585-510.000.

Fowler, Donald W.: *See—*
Bresie, Don A.; Burns, Jack M.; and Fowler, Donald W., 4,483,376, Cl. 141-95.000.

Framatome & Cie: *See—*
Bellaiche, Hubert G.; and Gebelin, Bernard M., 4,483,205, Cl. 73-863.230.

Franek, Jozef T.; and Porcuznik, Paul, to Metal Box PLC. Metal can bodies. 4,483,171, Cl. 72-347.000.

Frank, James P.: *See—*
Ellicott, Harold B.; and Frank, James P., 4,484,116, Cl. 318-325.000.

Frank, Robert G.; and Ewing, John J., to PPG Industries, Inc. Multiple chamber vacuum holder used to shape glass sheets with means to isolate adjacent vacuum chambers. 4,483,702, Cl. 65-273.000.

Franklin, Dennis M., to Solitron Devices, Inc. Binary weighted resistor and package. 4,484,213, Cl. 357-51.000.

Franklin Institute, The: *See—*
Heller, Harold L., 4,483,716, Cl. 137-7.000.

Freed, Meier E., to American Home Products Corporation. Hypotensive agents. 4,483,991, Cl. 546-189.000.

Freeman, Timothy J. Low alloy cold-worked martensitic steel. 4,483,722, Cl. 148-12.00B.

Freeport Kaolin Company: *See—*
Bacon, Franklin C., Jr.; and Brooks, Robert L., 4,483,624, Cl. 366-293.000.

French, Barry T.; and McNutt, Michael J., to Rockwell International Corporation. CCD Demodulator circuit. 4,484,143, Cl. 329-50.000.

Frey, Werner U.; Rometsch, Johannes; and Diem, Hans, to International Standard Electric Corporation. Keyboard arrangement. 4,483,634, Cl. 400-489.000.

Frieden, Peter: *See—*
Berges, Hanns-Peter; Frieden, Peter; and Kabelitz, Hans-Peter, 4,483,667, Cl. 418-84.000.

Friedli, Paul; and Hinderling, Thomas, to Inventio AG. Multiprocessor system. 4,484,264, Cl. 364-200.000.

Fritz, Frederick F.; and Daigle, Ralph L., to Alco Foodservice Equipment Company. Air ventilation system. 4,483,316, Cl. 126-299.00D.

Fritzsche Dodge & Olcott Inc.: *See—*
Christenson, Philip A.; Drake, Brian J.; and Willis, Brian J., 4,483,786, Cl. 252-522.00R.

Froehlich, Jerome E.: *See—*
Updegrave, William C.; Jones, Charles E.; and Froehlich, Jerome E., 4,483,637, Cl. 402-15.000.

Froening, Helmut; and Basyouni, Mohamed, to Hochtemperatur-Reaktorbau GmbH. Anchor construction for concrete walls or slabs. 4,483,121, Cl. 52-698.000.

Frolov, Alexandr N.: *See—*
Atkov, Oleg J.; Popov, Anatoly V.; Mukharlyamov, Nurmukhamed M.; Baranov, Vladimir F.; Belenkov, Jury N.; Frolov, Alexandr N.; Odintsov, Nikolai G.; and Fomina, Galina A., 4,483,344, Cl. 128-661.000.

Fromm, Pierra H., to Watson, W. Keith, 90% interest. Heat collecting and heat loss preventing apparatus. 4,483,324, Cl. 126-439.000.

Fronk, David. System and method for loading cargo into light aircraft. 4,483,499, Cl. 244-118.100.

Frye, Lowell D., to United States of America, Energy. Gas-tungsten arc welding of aluminum alloys. 4,484,060, Cl. 219-137.0OR.

Fuji Electric Company, Ltd.: *See—*
Tsuji, Nobuhiko; Nakamura, Keijiroh; Endoh, Koichi; Hamada, Toshiyoshi; and Ishida, Keiichi, 4,483,924, Cl. 435-288.000.
Yoshigae, Kiyohisa, 4,484,044, Cl. 200-144.00B.

Fuji Jukogyo Kabushiki Kaisha: *See—*
Kataoka, Ryuji, 4,483,296, Cl. 123-440.000.
Morikawa, Koji, 4,483,146, Cl. 60-602.000.
Suzuki, Hitoshi; and Morozumi, Tokuro, 4,483,183, Cl. 73-116.000.

Fuji Photo Film Co., Ltd.: *See—*
Kobayashi, Hidetoshi; Itoh, Isamu; Yoshioka, Yasuhiro; Mihayashi, Keiji; and Inoue, Noriyuki, 4,483,919, Cl. 430-566.000.
Naito, Hideki; Hara, Hiroshi; and Sato, Kozo, 4,483,914, Cl. 430-203.000.
Ogata, Yasuhiro; and Maekawa, Masakazu, 4,484,205, Cl. 346-200.000.
Ohara, Yuji; and Horikawa, Kazuo, 4,484,073, Cl. 250-327.200.
Sakai, Nobuo; Aotani, Yoshimasa; Yabuki, Yoshiharu; and Furutachi, Nobuo, 4,483,918, Cl. 430-372.000.
Suzuta, Tatsuo; and Hiratsuka, Nobuo, 4,483,928, Cl. 436-519.000.
Takahashi, Yoshiteru, 4,484,115, Cl. 318-254.000.
Tokuda, Kanji; and Nakauchi, Kenji, 4,483,492, Cl. 242-57.000.

Fuji Xerox Co., Ltd.: *See—*
Harada, Masaaki, 4,483,609, Cl. 355-11.000.
Takeyama, Kokichi; Sugawara, Kiyoshi; and Fukagawa, Yasuyuki, 4,483,528, Cl. 271-9.000.

Fujii, Akira: *See—*
Sekida, Minoru; Yamaki, Toshio; Fujii, Akira; Matsushita, Shuzo; and Kataoka, Akira, 4,483,601, Cl. 354-288.000.

Fujii, Hideharu: *See*—
Moroshima, Heiji; Terakado, Hajime; and Fujii, Hideharu, 4,484,206, Cl. 357-13.000.

Fujii, Yoshimasa: *See*—
Sugisawa, Ko; Matsui, Fumio; Yamamoto, Yozo; Nakanaga, Ryusuke; Takeda, Nobuji; Fujii, Yoshimasa; and Hirano, Yoshitaka, 4,483,879, Cl. 426-451.000.

Fujikake, Kenji: *See*—
Yokoi, Yutaka; and Fujikake, Kenji, 4,483,304, Cl. 123-549.000.

Fujikawa, Tsuneo; and Takagishi, Haruyoshi, to Nissan Motor Company, Limited. Multi-shift vehicle-body assembling apparatus. 4,483,476, Cl. 228-4.100.

Fujikura Cable Works, Ltd.: *See*—
Murayama, Seizo; Isawa, Kazuo; Maejima, Masatsugu; Usuki, Takayoshi; and Saruwatari, Kohichi, 4,483,751, Cl. 204-37.100.

Fujimoto, Koichi: *See*—
Nakao, Hideo; Fujimoto, Koichi; Ishihara, Sadao; Sugawara, Shinichi; and Igarashi, Isamu, 4,483,855, Cl. 424-246.000.

Fujimura, Isao; Nakajima, Sadaaki; Abe, Morio; and Taniguchi, Masahiko, to Chisso Corporation. Non-woven fabric. 4,483,897, Cl. 428-288.000.

Fujioka, Hironari: *See*—
Yamamoto, Tohru; and Fujicka, Hironari, 4,484,204, Cl. 346-200.000.

Fujioka, Kenji; Morita, Takayuki; Fujiwara, Kenichi; and Ito, Kouji, to Nippondenso Co., Ltd. Car air conditioner with a freezer/refrigerator. 4,483,151, Cl. 62-157.000.

Fujisaki, Masanori: *See*—
Ishikawa, Norikazu; and Fujisaki, Masanori, 4,483,303, Cl. 123-527.000.

Fujisaki, Masaru; Tsuchida, Tetsuo; Sasajima, Yoichi; Ito, Hirohisa; and Morita, Masahiro, to Honda Giken Kogyo Kabushiki Kaisha; and Sumitomo Electric Industries, Ltd. Method of manufacturing continuous fiber reinforced plastic rims. 4,483,729, Cl. 156-222.000.

Fujisawa, Kyuichi, to Alps Electric Co., Ltd. Pen type recording apparatus. 4,484,201, Cl. 346-139.00C.

Fujisawa, Mutsuo; Otani, Mitsuru; Ohtsu, Haruhiro; and Kameda, Tsutomu, to Toyo Chemical Laboratories, Inc. Compounded thermoplasticized isoprene polymer resin for filling a dental root canal, and method of making same. 4,483,679, Cl. 433-228.000.

Fujita, Katsuji: *See*—
Komatsu, Shigeru; Nakamura, Michio; and Fujita, Katsuji, 4,484,212, Cl. 357-51.000.

Fujita, Tsutomu: *See*—
Takemoto, Toyoki; Fujita, Tsutomu; Sakai, Hiroyuki; and Yamada, Haruyasu, 4,484,211, Cl. 357-50.000.

Fujitsu Fanuc Limited: *See*—
Gamo, Gotaro; and Kinoshita, Mitsuo, 4,484,287, Cl. 364-474.000.
Nagamine, Tsuyoshi; Kawamura, Hideaki; and Miyata, Mitsuto, 4,484,286, Cl. 364-474.000.

Fujitsu Limited: *See*—
Igaki, Seigo; Goto, Yoshiro; and Furukawa, Yasuo, 4,484,077, Cl. 250-492.200.
Miwa, Hirohide, 4,483,345, Cl. 128-662.000.
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Fun, Johannes K., to Applied Power Inc. Integral hydraulic tilt-cab suspension and tilting apparatus. 4,483,409, Cl. 180-89.150.

Furrer, Peter; Timm, Jurgen; and Wehner, Frank, to Swiss Aluminium Ltd. Process for preparing fine-grained rolled aluminum products. 4,483,719, Cl. 148-2.000.

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Seragnoli, Enzo, 4,483,351, Cl. 131-282.000.

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Gahan, Geoffrey D., to Mouldmaking Design Centre Limited. Swivel mountings. 4,483,503, Cl. 248-349.000.

Gailey, J. Lynn, to Alcan Aluminum Corporation. Ceiling system with ceiling conversion strip. 4,483,116, Cl. 52-484.000.

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Garcia, Eduardo L. Height adjustable roof engaging attachment for ladders. 4,483,416, Cl. 182-107.000.

Garcia, Silverio M., to Capetrol International, Inc. Metal plating iron-containing substrates. 4,483,887, Cl. 427-436.000.

Gardian, Johannes; and Beine, Wilhelm, to Benteler-Werke AG. Centered pipe machining arrangement. 4,483,647, Cl. 408-82.000.

Gardner, David M.; and McElligott, Paul J., to Pennwalt Corporation. Photochemical process for preparing amines. 4,483,757, Cl. 204-158.00R.

Gardner, Roland C., to Clevepost, Inc. Packaging system and corner post therefor. 4,483,444, Cl. 206-594.000.

Garrett, David: *See*—
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Gast, Uwe, to Dr. Ing. Rudolf Hell GmbH. Method and circuit arrangement for contrast intensification. 4,484,232, Cl. 358-299.000.

Gavrilovich, Charles D., to AT&T Bell Laboratories. Method and apparatus for identifying faulty communications circuits. 4,484,030, Cl. 179-8.00A.

Gazzoni, Domenico, to Sorema S.r.l. Apparatus for separating materials of small size. 4,483,768, Cl. 209-18.000.

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Gebert, Frank X., to Singer Company, The. Service device for the interior viewing surface of a simulator dome. 4,483,033, Cl. 15-3.000.

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Geesen, Michel; Mourant, Jacques; and Ludwig, Daniel P., to Electronique Marcel Dassault; and Centre National d'Etudes Spatiales. Apparatus and method for acquiring and processing radio signals received at different frequencies. 4,484,356, Cl. 455-165.000.

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Axelrod, Robert J., 4,483,953, Cl. 524-119.000.
Bedard, James F., 4,484,190, Cl. 340-825.570.
Bedard, James F.; Eichelberger, Charles W.; and Nati, Salvator F., Jr., 4,484,295, Cl. 364-607.000.
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Bottomley, Paul A.; and Edelstein, William A., 4,484,138, Cl. 324-307.000.
Chang, Hsiao-Nan L., 4,484,137, Cl. 324-166.000.
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Herbst, LeRoy J.; Hollenbeck, Robert K.; Hooker, John M.; Jenkins, Thomas E.; Preher, John L.; and Rickard, Jimmy R., 4,484,243, Cl. 361-50.000.
Koch, Robert E.; and Stetson, Earl W., 4,484,247, Cl. 361-128.000.
Leightner, Robert A.; and Thibault, Henry, 4,483,598, Cl. 350-558.000.
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Lucas, Gary M.; and Dziark, John J., 4,483,973, Cl. 528-21.000.
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Ohno, John M., 4,483,892, Cl. 428-36.000.

Roberts, Gerald E.; and Staples, Alfred G., 4,484,158, Cl. 333-191.000.
Seymour, Raymond K.; and Ashline, William J., 4,484,045, Cl. 200-144.00R.

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Summers, Anthony C., 4,483,513, Cl. 251-308.000.

George Fischer Ltd.: *See—*
Tanner, Hans, 4,483,383, Cl. 164-37.000.

Georgel, Jean, to Thomson-CSF. Antenna support system with two dimension flexibility. 4,484,198, Cl. 343-880.000.

Gerber, Heinz J., to Gerber Scientific Inc. Apparatus and method for indexing sheet material. 4,483,472, Cl. 226-16.000.

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Bloom, William G.; and Geschwind, Gary I., 4,483,338, Cl. 128-303.130.

Geschwind, Rune L., to Sepson AB. Device for preventing overload of a winch. 4,483,518, Cl. 254-274.000.

Gfrerer, Manfred; Jager, Heimo; and Koch, Friedrich, to Vereinigte Edelstahlwerke Aktiengesellschaft (VEW). Method and apparatus for regulating the melting rate of an electrode during electroslag remelting. 4,483,708, Cl. 75-10.00R.

Ghenassia, Elie; and Lakodey, Andre , to Atochem. Process for the manufacture of glycol monoethers. 4,484,009, Cl. 568-678.000.

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Gibas, Christoph, to bso Steuerungstechnik GmbH. Activating magnet, particularly a stroke magnet. 4,484,167, Cl. 335-260.000.

Gilbert, Keith W. Air preheater. 4,483,391, Cl. 165-134.0DP.

Gillespie, David; Brodsky, Isadore; and Bresser, Joel, to Hahnemann University. Immobilization of message RNA directly from cells onto filter material. 4,483,920, Cl. 435-6.000.

Gillis, Rolando. Vascular surgery roll. 4,483,339, Cl. 128-334.00R.

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Gilmor, James E. Fuel vaporization device. 4,483,305, Cl. 123-557.000.

Gilmor, James E. Fuel vaporization device for internal combustion engine. 4,483,307, Cl. 123-558.000.

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Glavna Directsia pri Tvorcheski Fond na Sayuza na Bulgarskite Hudojnitsi (SBH): *See—*
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Glindsjo, Per, to ADL-Innovation KB. Process for injection of fluid, e.g. slurry in e.g. flue gases and a nozzle device for the accomplishment of the process. 4,483,805, Cl. 261-78.00A.

Globe-Union Inc.: *See—*
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Gohler, Peter: *See—*
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Goldfarb, Ralph, to Oakwood Industries, Inc. Polytetrafluorethylene-polyurethane coated fabric. 4,483,900, Cl. 428-262.000.

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Goodfellow, Glenn B., to UTI Corporation. Method for controlling properties of powdered metals and alloys. 4,483,174, Cl. 72-358.000.

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Goodman, William D.; and Sutherland, Dan, to Campbell-Taggart, Inc. Automated food processing equipment. 4,483,242, Cl. 99-450.600.

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Gordon, Kenneth N. Convertible paper bag and doily. 4,484,350, Cl. 383-4.000.

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Gorski, Florian J. Bottle closure device. 4,483,451, Cl. 215-296.000.

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Graham, Daniel M., Jr. Pipe puller. 4,483,561, Cl. 294-15.000.

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Grasse, Palmer, to Grasse, Palmer, Trustee of Grasse Family Trust. Oscillated head with bearing support and counterbalance, for floor stripping machine. 4,483,566, Cl. 299-37.000.

Graves, James D. Safety plug adapter. 4,484,185, Cl. 340-656.000.

Gray, James B.; Jorgenson, Peter L.; and Joyce, Robert A., to Seam Team. Carpet seaming tape with separate heating circuits. 4,483,896, Cl. 428-200.000.

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Gray Tool Company: *See—*
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Halcon SD Group, Inc., The: *See—*
Jacobson, Stephen E., 4,483,994, Cl. 549-230.000.
Jacobson, Stephen E., 4,483,996, Cl. 549-524.000.
Rizkalla, Nabil, 4,483,803, Cl. 260-546.000.
Rizkalla, Nabil, 4,483,804, Cl. 260-546.000.
Hale, John R., to RCA Corporation. Strengthening means for a deep-drawn in-line electron gun electrode. 4,484,102, Cl. 313-417.000.
Halford, Wayne R.: *See—*
Gabler, Otto L.; Halford, Wayne R.; Kilroy, Eugene J.; and McKittrick, Michael T., 4,483,096, Cl. 446-430.000.
Hall, Henry K., Jr.: *See—*
Conciatori, Anthony B.; Choe, Eui W.; and Hall, Henry K., Jr., 4,483,977, Cl. 528-342.000.
Hall, Lester B., to Hal, Gary L. Ultrasonic pest control device. 4,484,315, Cl. 367-139.000.
Halliburton Company: *See—*
Bravenec, Frank R., 4,484,139, Cl. 324-366.000.
Dennis, John R., 4,484,313, Cl. 367-27.000.
Maddock, Jr. Alfred W., 4,483,187, Cl. 73-151.000.
Hallmark Cards, Inc.: *See—*
Beery, Floyd; Renoe, Ronald R.; and Williams, Larry, 4,483,890, Cl. 428-7.000.
Halloran, Michael T., to Coulter Electronics, Inc. Elongate particle sensing aperture. 4,484,134, Cl. 324-71.100.
Hallqvist, Sten, to Aktiebolaget Bofors. Bearing means for a gun barrel. 4,483,235, Cl. 89-14.00R.
Hamada, Toshiyoshi: *See—*
Tsuji, Nobuhiko; Nakamura, Keijiroh; Endoh, Koichi; Hamada, Toshiyoshi; and Ishida, Keiichi, 4,483,924, Cl. 435-288.000.
Hamar, Martin R. Laser measurement system, virtual detector probe and carriage yaw compensator. 4,483,618, Cl. 356-400.000.
Hamel, Roger B. J.: *See—*
Ferrieu, Gilbert M. M.; Hamel, Roger B. J.; Lefort, Emmanuel; and Moliere, Francoise, 4,484,034, Cl. 179-81.00B.
Hamernik, Peter: *See—*
Muhi, Charles; Hamernik, Peter; and Szczecko, Miguel, 4,483,622, Cl. 366-129.000.
Hamisch, Paul H., Jr., to Monarch Marking Systems, Inc. Method of making an ink roller. 4,483,053, Cl. 29-148.40D.
Hanada, Hiroyoshi; and Adachi, Hiroyoshi, to Hayakawa Rubber Co., Ltd. Golf ball. 4,483,537, Cl. 273-220.000.
Hanari, Tohru: *See—*
Sato, Akihiro; Suzuki, Takeshi; Kikuta, Kazutsune; Chiba, Hiromasa; Uwai, Toshihiro; Matsuda, Kenji; and Hanari, Tohru, 4,483,971, Cl. 526-142.000.
Hans, Waldemar: *See—*
Hafner, Udo; and Hans, Waldemar, 4,483,484, Cl. 239-585.000.
Hanscom, Bradford E.: *See—*
Lyle, Stephen V.; and Hanscom, Bradford E., 4,484,036, Cl. 179-84.00A.
Hansen, Edward L. Thin wall tube straightening apparatus. 4,483,175, Cl. 72-389.000.
Hansen, Guenter: *See—*
Eilingsfeld, Heinz; Hansen, Guenter; Seybold, Guenther; and Zeidler, Georg, 4,483,795, Cl. 534-756.000.
Hanshoff, Gunnar: *See—*
Svahn, Carl M. E.; Merenyi, Ferenc; Karlsson, Lennart E.; and Hanshoff, Gunnar, 4,483,867, Cl. 424-279.000.
Hanson, Elis D., to United States of America, Army. Pulse code modulation rate converter. 4,484,327, Cl. 370-84.000.
Hantsch, Hartmut: *See—*
Krumrein, Gerhard; and Hantsch, Hartmut, 4,483,605, Cl. 354-417.000.
Hapelt, Karl-Heinz: *See—*
de Jong, Eduard; Hapelt, Karl-Heinz; and Knipf, Helmut, 4,483,975, Cl. 528-288.000.
Hara, Hiroshi: *See—*
Naito, Hideki; Hara, Hiroshi; and Sato, Kozo, 4,483,914, Cl. 430-203.000.
Harada, Masaaki, to Fuji Xerox Co., Ltd. Illumination device for a copying machine. 4,483,609, Cl. 355-11.000.
Harbulak, Edward P.; and Stants nee Halliday, Cynthia A., to OMI International Corporation. Aqueous electroless nickel plating bath and process. 4,483,711, Cl. 106-1.220.
Hareng, Michel: *See—*
Aubourg, Philippe; Huignard, Jean P.; and Hareng, Michel, 4,483,592, Cl. 350-342.000.
Harer, Helmut: *See—*
Ahner, Peter; Harer, Helmut; and Schustek, Siegfred, 4,484,049, Cl. 219-10.510.

Harigae, Shunji: *See*—
Koishi, Kenji; Yoshida, Tomio; Satoh, Isao; and Harigae, Shunji, 4,484,319, Cl. 369-46.000.

Harness, Ian: *See*—
Stangroom, James E.; and Harness, Ian, 4,483,788, Cl. 252-578.000.

Harrah's, Inc.: *See*—
Pratt, Gary A., 4,483,431, Cl. 194-97.00A.

Harrington, James N. Caging mechanism for gyroscopes. 4,483,207, Cl. 74-5.140.

Harris, Martin; and Wood, Derek A., to Shell Oil Company. Insecticidal N-substituted-2-(nitromethylene)-tetrahydro-2H-1,3-thiazines. 4,483,856, Cl. 424-246.000.

Harrison, Kenneth J.; Raynes, Edward P.; Saunders, Frances C.; and Thompson, David J., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Liquid crystal materials containing pleochroic anthraquinone dyes. 4,483,594, Cl. 350-349.000.

Harrison, Marc L.: *See*—
Blahut, Donald E.; and Harrison, Marc L., 4,484,260, Cl. 364-716.000.

Harrold, Stanley E., to Standard Products Company, The. Fused flock system. 4,483,893, Cl. 428-90.000.

Harry, Ieuan L.: *See*—
Krishnakumar, Suppayan M.; Beck, Martin H.; and Harry, Ieuan L., 4,483,436, Cl. 198-648.000.

Hart, Richard A.: *See*—
Chenausky, Peter P.; Hart, Richard A.; Laughman, Lanny M.; Belek, Ronald E.; and Wayne, Robert J., 4,484,333, Cl. 372-64.000.

Hartman, Frederick A., to Procter & Gamble Company, The. Magnesium salts of peroxycarboxylic acids. 4,483,781, Cl. 252-174.120.

Hartman, John T., to Xerox Corporation. Constant current density high voltage power supply. 4,484,256, Cl. 363-26.000.

Harvey Hubbell Incorporated: *See*—
Schaefer, Hermann; and Hoffman, Ernest G., 4,484,021, Cl. 174-53.000.

Hase, Marie: *See*—
Kampfer, Helmut; Wendisch, Detlef; and Hase, Marie, 4,483,799, Cl. 260-456.00R.

Hasegawa, Ryusuke, to Allied Corporation. Iron-boron solid solution alloys having high saturation magnetization and low magnetostriction. 4,483,724, Cl. 148-31.550.

Hasegawa, Shumpei, to Honda Giken Kogyo Kabushiki Kaisha. Air intake side secondary air supply system for an internal combustion engine equipped with exhaust gas recirculation control system. 4,483,308, Cl. 123-571.000.

Hashimoto, Fukashi: *See*—
Ohba, Yozo; Toyoda, Takashi; Yamanaka, Masaaki; Hashimoto, Fukashi; and Kakizaki, Tetsuji, 4,483,965, Cl. 525-322.000.

Hashimoto, Noriyoshi: *See*—
Miwa, Kenji; and Hashimoto, Noriyoshi, 4,483,434, Cl. 198-394.000.

Hashimoto, Takeji; and Umemoto, Osami, to Dainippon Screen Seizo Kabushiki Kaisha. Sheet material handling device. 4,483,527, Cl. 271-5.000.

Hass, Eckhard, to Klockner-Humboldt-Deutz AG. Compression-ignition internal combustion engine. 4,483,290, Cl. 123-284.000.

Hattori, Kyo: *See*—
Akagi, Motonobu; Kawabata, Yasuhiro; and Hattori, Kyo, 4,483,369, Cl. 137-625.120.

Haug, Peter. Magnetic-inductive flowmeter. 4,483,201, Cl. 73-861.120.

Haulin, Tord L., to Telefonaktiebolaget L M Ericsson. Pulse width modulated power amplifier. 4,484,145, Cl. 330-9.000.

Hauser, Hugo, to Tritec Industries, Inc. Bellows-type pump and metering system. 4,483,665, Cl. 417-401.000.

Hausknecht, Louis A. Variable valve control system with dampener assembly. 4,483,283, Cl. 123-90.460.

Hawkeye Chemical Company: *See*—
Moore, William P., 4,483,877, Cl. 426-54.000.

Hawkins, Robert W., to Deere & Company. Variable drive for a harvester functional element. 4,483,128, Cl. 56-11.100.

Hawrylo, Frank Z., to United States of America, Air Force. Multiple double heterojunction buried laser device. 4,484,332, Cl. 372-50.000.

Hayakawa Rubber Co., Ltd.: *See*—
Hanada, Hiroyoshi; and Adachi, Hiroyoshi, 4,483,537, Cl. 273-220.000.

Hayashi, Asao: *See*—
Aoki, Masahiro; Oinoue, Kenichi; Ida, Masatoshi; and Hayashi, Asao, 4,483,602, Cl. 354-402.000.

Hayashi, Masayuki, to Kabushiki Kaisha Sanyo Seiki. Forming rolls for use in the fabrication of welded tubes. 4,483,167, Cl. 72-179.000.

Hayashi, Steven J.: *See*—
Katzman, James A.; Bartlett, Joel F.; Bixler, Richard M.; Davidow, William H.; Despotakis, John A.; Graziano, Peter J.; Green, Michael D.; Greig, David A.; Hayashi, Steven J.; Mackie, David R.; McEvoy, Dennis L.; Treybig, James G.; and Wierenga, Steven W., 4,484,275, Cl. 364-200.000.

Head, Glenn D., Jr., to Deere & Company. Cotton picker spindle. 4,483,132, Cl. 56-50.000.

Hearn, David D., to Atlantic Richfield Company. Method and apparatus for cutting patterns through pipe. 4,483,721, Cl. 148-9.600.

Heck, Klaus; Linzenkirchner, Karl; Indra, Fritz; Lindner, Horst; and Munnighoff, Hans. Method for the treatment of surfaces of a workpiece of carbon-containing cast iron. 4,483,755, Cl. 204-129.100.

Heerema Engineering Service B.V.: *See*—
van der Heyden, Henricus J. T. M., 4,483,563, Cl. 294-90.000.

Heeres, Jan; Backx, Leo J. J.; and Mostmans, Joseph H., to Janssen Pharmaceutica N.V. Antimicrobial imidazole derivatives. 4,483,865, Cl. 424-273.00R.

Heffron, Michael A.: *See*—
Maier, James J.; Woodard, Jeffrey P.; Ferrante, John V.; and Heffron, Michael A., 4,484,297, Cl. 364-717.000.

Heider, Hermann: *See*—
Engmann, Gunther; Hagen, Werner; and Heider, Hermann, 4,483,490, Cl. 242-25.00R.

Heimala, Seppo O., to Outokumpu Oy. Hydrometallurgical process for the recovery of valuable metals from sulfidic, silicate-containing raw materials. 4,483,827, Cl. 423-28.000.

Heimann, Heinz: *See*—
Ade, Rolf; Heimann, Heinz; Kofink, Wolfgang; and Prohaska, Hans, 4,484,094, Cl. 310-43.000.

Heintz, Lawrence T., to Texas Industries, Inc. Water guard. 4,483,462, Cl. 222-63.000.

Heinz, Lothar: *See*—
Beiermann, Norbert; Scheller, Manfred; Kretschmer, Horst; Noack, Jurgen; Blaschke, Klaus-Dieter; Heinz, Lothar; Gohler, Peter; Schweigel, Hans-Joachim; Deicke, Hanshans-Heinrich; Rudolph, Klaus-Peter; and Flachowsky, Johannes, 4,483,199, Cl. 73-861.040.

Helle/ , Jacques; and Charlet, Gerard, to Compagnie d'Electronique et de Piezo-Electricite. Voltage controlled crystal oscillator having wide frequency range. 4,484,157, Cl. 331-116.00R.

Heller, Harold L., to Franklin Institute, The. Poultice method for extracting hazardous spills. 4,483,716, Cl. 137-7.000.

Hellmann, Walter: *See*—
Krajec, Otmar; and Hellmann, Walter, 4,483,814, Cl. 264-230.000.

Hemond, Robert F., to Rapistan Division of Lear Siegler, Inc. Tote director. 4,484,289, Cl. 364-478.000.

Henke, Steven P.; and Fields, Robert N., to Ritron, Inc. Handheld transceiver with frequency synthesizer and sub-audible tone squelch system. 4,484,355, Cl. 455-76.000.

Hennecke, Johannes; Horst, Heinz; and Podellek, Helmut, to Mannesmann Aktiengesellschaft. Shaft drilling machine. 4,483,403, Cl. 175-88.000.

Henry, Nelson R., to Woodman Company, Inc., The. Adjustable drive mechanism. 4,483,126, Cl. 53-551.000.

Hensley, Albert L., Jr.; Miller, Jeffrey T.; Nevitt, Thomas D.; and Tait, A. Martin, to Standard Oil Company (Indiana). Hydrocarbon conversion process. 4,483,764, Cl. 208-111.000.

Heom, James: *See*—
Provanzano, Salvatore R.; Aldrich, Wilbert H.; D'Angelo, Robert A.; Drottar, Emil P.; Finnegan, John J., Jr.; Heom, James; Hill, Lawrence W.; Malcolm, Ronald D.; Nollet, Michael C.; Perlman, Baruch S.; Tressler, Michael B.; Van Schalkwyk, John E.; and Webb, Kincade N., 4,484,303, Cl. 364-900.000.

Herbertz, Toni: *See*—
Reinehr, Ulrich; Bernklau, Kurt; Burghart, Hans K.; Herbertz, Toni; and Jungverdorben, Hermann-Josef, 4,483,903, Cl. 428-373.000.

Herbst, LeRoy J.; Hollenbeck, Robert K.; Hooker, John M.; Jenkins, Thomas E.; Preher, John L.; and Rickard, Jimmy R., to General Electric Company. Protective circuit arrangement for a sheathed heating element. 4,484,243, Cl. 361-50.000.

Hercules Incorporated: *See*—
Maslanka, William W.; and Spence, Gavin G., 4,483,959, Cl. 524-457.000.

Herkert, Klaus H.: *See*—
Shelton, Kenneth B.; Herkert, Klaus H.; and Twedt, Lynn O., 4,483,045, Cl. 16-95.00R.

Hermann C. Starck Berlin: *See*—
Albrecht, Wolf-Wigand; and Papp, Uwe, 4,483,819, Cl. 419-2.000.

Hernandez, Ernest. Bar support for use with reinforced concrete. 4,483,119, Cl. 52-689.000.

Herndon, William H., to Fairchild Camera & Instrument Crop. Synchronous sense amplifier. 4,484,311, Cl. 365-190.000.

Herrmann, Rudiger; Schlosser, Detlef; and Wimmer, Heinz, to Mahle GmbH. Piston. 4,483,286, Cl. 123-193.00P.

Herrold, Paul R.: *See*—
Cason, William C.; Kuecker, Ward A.; and Herrold, Paul R., 4,484,302, Cl. 364-900.000.

Hertel, Wolfgang: *See*—
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Hertz, Claude M., to Ronk Electrical Industries, Inc. Three-phase delta-wound motor operated from single-phase current. 4,484,125, Cl. 318-768.000.

Hess, Heinrich: *See*—
Grogler, Gerhard; Hess, Heinrich; and Kopp, Richard, 4,483,974, Cl. 528-68.000.

Hess, Norman B., to Betz Laboratories, Inc. Penetration test kit. 4,483,182, Cl. 73-73.000.

Hettiger, James: *See*—
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HEW-Kabel, Heinz Eilentropp KG: *See*—
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Heymes, Rene , to Roussel Uclaf. Cephalosporanic acid derivatives. 4,483,981, Cl. 544-28.000.

Higgins, George D.: *See*—
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Higuchi, Chojiro: *See*—
Ohoka, Masaharu; Katoh, Toshio; Mita, Ryuichi; Kawashima, Nobuyuki; Higuchi, Chojiro; Kawashima, Nobuhiro; Yamaguchi, Akihiro; Nagai, Shousuke; and Takano, Takao, 4,484,003, Cl. 562-574.000.
Hijikata, Isamu: *See*—
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Hikasa, Tadashi: *See*—
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Hill, Lawrence W.: *See*—
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Hinderling, Thomas: *See*—
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Hiramatsu, Akira, to Canon Kabushiki Kaisha. Focus detecting device with shielding. 4,483,604, Cl. 354-402.000.
Hiramatsu, Akira: *See*—
Kawai, Tohru; Katsuma, Makoto; Murakami, Hiroyasu; Hiramatsu, Akira; and Kaneda, Naoya, 4,484,099, Cl. 310-317.000.
Hirano, Katsuhiko, to Nippon Gakki Seizo Kabushiki Kaisha. Preset apparatus of electronic musical instrument. 4,483,231, Cl. 84-1.190.
Hirano, Yoshitaka: *See*—
Suginawa, Ko; Matsui, Fumio; Yamamoto, Yozo; Nakanaga, Ryusuke; Takeda, Nobuji; Fujii, Yoshimasa; and Hirano, Yoshitaka, 4,483,879, Cl. 426-451.000.
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Hiratsuka, Nobuo: *See*—
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Hitachi Cable, Ltd.: *See*—
Inada, Tomoki; Mizuniwa, Seiji; Toyoshima, Toshiya; Fukumoto, Masashi; and Nakagawa, Junkichi, 4,483,735, Cl. 156-607.000.
Hitachi Denshi Kabushiki Kaisha: *See*—
Sato, Kazuhiro; Murata, Nobuo; Takahashi, Kenji; and Nagahara, Shusaku, 4,484,224, Cl. 358-213.000.
Hitachi, Ltd.: *See*—
Abe, Masahiro; and Motosaka, Katsuo, 4,483,656, Cl. 415-53.00T.
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Imazeki, Shuji; Mukoh, Akio; Sato, Mikio; Imahori, Seiichi; Kaneko, Masaharu; and Ozawa, Tetsuo, 4,483,593, Cl. 350-349.000.
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Hitachi Maxell, Ltd.: *See*—
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Hitachi Shipbuilding & Engineering Co.: *See*—
Yamamoto, Masahiko; Nishino, Yoshinori; Komura, Akio; and Ebisu, Tomio, 4,483,670, Cl. 425-324.100.
Hitzel, Hans: *See*—
Rolke, Dietrich; Hitzel, Hans; and Brink, Andries, 4,483,772, Cl. 210-601.000.
Ho, Paul. Phonetic multilingual word processor. 4,484,305, Cl. 364-900.000.
Ho, Tse-Lok: *See*—
Cardenas, Carlos G.; Ho, Tse-Lok; and Liu, Shing-Hou, 4,484,007, Cl. 568-628.000.
Hochtemperatur-Reaktorbau GmbH: *See*—
Froening, Helmut; and Basyouni, Mohamed, 4,483,121, Cl. 52-698.000.
Hoechst Aktiengesellschaft: *See*—
Christ, Wilhelm; von der Eltz, Hans-Ulrich; and Reuther, Albert, 4,483,032, Cl. 8-149.100.
Cremer, Josef; Holz, Josef; Haas, Hans; and Schulte, Friedrich, 4,483,837, Cl. 423-309.000.
Jakob, Franz; and Horoldt, Ernst, 4,483,947, Cl. 523-156.000.
Hoechst Aktiengesellschaft: *See*—
Semmler, Hans-Joachim, 4,483,968, Cl. 525-401.000.
Hofer, Gerald: *See*—
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Hoffman, Ernest G.: *See*—
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Hoffman, Harmon L., Jr.; Weinberg, Steven; and Park, John P., to Meadox Medicals, Inc. High-strength ligament prosthesis. 4,483,023, Cl. 3-1.000.
Hoffman-La Roche Inc.: *See*—
Coffen, David L., 4,483,990, Cl. 546-149.000.
Hoffmann, Alfred; and Verburgh, Martin B., to SKF Industrial Trading & Development Co. B.V. Apparatus for making multilayer powder blanks. 4,483,671, Cl. 425-435.000.
Hofmann, Jurgen: *See*—
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Hoganas AG: *See*—
Engstrom, Ulf F. I., 4,483,905, Cl. 428-570.000.
Holland, Robert E.: *See*—
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Holloway, Peter R., to Analog Devices, Inc. Single-supply IC digital-to-analog converter for use with microprocessors. 4,484,149, Cl. 330-291.000.
Holotronics Corporation, The: *See*—
Kirk, Ronald L., 4,484,219, Cl. 358-90.000.
Holz, Josef: *See*—
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Honda Giken Kogyo Kabushiki Kaisha: *See*—
Fujisaki, Masaru; Tsuchida, Tetsuo; Sasajima, Yoichi; Ito, Hirohisa; and Morita, Masahiro, 4,483,729, Cl. 156-222.000.
Furukawa, Yoshimi; and Sano, Shoichi, 4,483,547, Cl. 280-91.000.
Hasegawa, Shumpei, 4,483,308, Cl. 123-571.000.
Sakaoka, Hiromu, 4,483,282, Cl. 123-52.0MB.
Tagami, Katsutoshi; Takahashi, Tsuneo; Yasui, Shinichiro; Sugimura, Masao; and Takahashi, Fumitaka, 4,484,284, Cl. 364-449.000.
Honda Motor Co., Ltd.: *See*—
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Honda, Noriyuki, to Meinan Machinery Works, Inc. Plywood manufacturing method and apparatus. 4,483,730, Cl. 156-242.000.
Honeywell Inc.: *See*—
Mott, Richard C., 4,483,358, Cl. 137-39.000.
Honeywell Information Systems Inc.: *See*—
Crain, John B., 4,484,269, Cl. 364-200.000.
Miu, Ming T.; Bradley, John J.; and Shen, Jian-Kuo, 4,484,271, Cl. 364-200.000.
Negi, Virendra S.; and Tague, Steven A., 4,484,300, Cl. 364-755.000.
Hong, Se J.; Nair, Ravindra K.; and Shapiro, Eugene, to International Business Machines Corporation. High speed machine for the physical design of very large scale integrated circuits. 4,484,292, Cl. 364-491.000.
Honl, Wolf-Dieter, to Repa Feinstanzwerk GmbH. Mechanism for blocking a roll-up device for safety belts. 4,483,495, Cl. 242-107.40A.
Hooker, John M.: *See*—
Herbst, LeRoy J.; Hollenbeck, Robert K.; Hooker, John M.; Jenkins, Thomas E.; Preher, John L.; and Rickard, Jimmy R., 4,484,243, Cl. 361-50.000.
Hori, Kohei: *See*—
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Horikawa, Kazuo: *See*—
Ohara, Yuji; and Horikawa, Kazuo, 4,484,073, Cl. 250-327.200.
Horino, Shigeo: *See*—
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Horinouchi, Atsushi; and Koide, Satoshi, to Sanyo Electric Co., Ltd. Electric cooking oven having a temperature sensing device with output compensation. 4,484,050, Cl. 219-10.55B.
Hornbaker, Edwin D.: *See*—
Semen, John; Jones, Jesse D.; and Hornbaker, Edwin D., 4,483,949, Cl. 523-514.000.
Horoldt, Ernst: *See*—
Jakob, Franz; and Horoldt, Ernst, 4,483,947, Cl. 523-156.000.
Horsley, John K.: *See*—
Dyett, Derek H.; and Horsley, John K., 4,483,349, Cl. 131-94.000.
Horst, Heinz: *See*—
Hennecke, Johannes; Horst, Heinz; and Podellek, Helmut, 4,483,403, Cl. 175-88.000.
Horvath, Joseph L.: *See*—
Balderes, Demetrios; Horvath, Joseph L.; and Lipschutz, Lewis D., 4,483,389, Cl. 165-80.00B.
Hosaka, Akio; and Yamaguchi, Hiroshi, to Nissan Motor Company, Limited. Feedback air fuel ratio control system and method. 4,483,300, Cl. 123-489.000.
Hosaka, Hiroshi: *See*—
Kasai, Shunichi; Ogata, Takashi; Tamanoi, Teruo; and Hosaka, Hiroshi, 4,483,845, Cl. 423-617.000.
Hosaka, Yukio, to Satake Engineering Co., Ltd. Rice whitening apparatus. 4,483,244, Cl. 99-488.000.
Hoskins, Nathan D. Pliers-type top opener. 4,483,221, Cl. 81-3.440.
Hostetler, John E.; Hulsebusch, William H.; and Sears, I. Weir, Jr., to Apparel Form Company. Expandable fabric mold. 4,483,467, Cl. 223-74.000.
Houghton, LeRoy H., to Champion Spark Plug Company. Nickel alloy. 4,483,822, Cl. 420-456.000.

House Food Industrial Company Limited: *See*—
Sugisawa, Ko; Matsui, Fumio; Yamamoto, Yozo; Nakanaga, Ryusuke; Takeda, Nobuji; Fujii, Yoshimasa; and Hirano, Yoshitaka. 4,483,879, Cl. 426-451.000.

Houston, Theodore W.: *See*—
Everett, Chauncey L.; Houston, Theodore W.; and Darley, Henry M., 4,484,310, Cl. 365-174.000.

Howard, Curtiss G.; Jordan, Lester W.; Yaworsky, Chester E.; and Zampino, Frank L., to United Technologies Corporation. Electron beam hole drilling apparatus. 4,484,058, Cl. 219-121.0EJ.

Howard, Gerald J. Drill bit for glass and ceramic structures. 4,483,108, Cl. 51-283.00R.

Howell, Frederick H., to Ciba-Geigy AG. Hydroquinones. 4,484,000, Cl. 560-75.000.

Hoyt, Richard E.: *See*—
Nielsen, Anker J., Jr.; and Hoyt, Richard E., 4,483,164, Cl. 70-399.000.

HRI, Inc.: *See*—
Kydd, Paul H., 4,483,631, Cl. 374-141.000.

Hrncir, Robert E.: *See*—
Ross, Herbert G., Jr.; and Hrncir, Robert E., 4,483,367, Cl. 137-416.000.

Hsei, Paul K.: *See*—
Liston, Max D.; and Hsei, Paul K., 4,483,616, Cl. 356-246.000.

Huang, Jen-chi: *See*—
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Hubel, Werner: *See*—
Disteldorf, Josef; Gras, Rainer; Hubel, Werner; Wolf, Elmar; and Schnurbusch, Horst, 4,483,798, Cl. 260-239.00A.

Hughes Tool Company: *See*—
Gray, William R., 4,483,397, Cl. 166-250.000.
Roberts, Leo L., 4,483,660, Cl. 416-213.00A.

Huignard, Jean P.: *See*—
Aubourg, Philippe; Huignard, Jean P.; and Hareng, Michel, 4,483,592, Cl. 350-342.000.

Huizinga, Allen H.: *See*—
Beuscher, Hugo J.; Bosco, Harry L.; Huizinga, Allen H.; and Williams, John R., 4,484,323, Cl. 370-58.000.

Hulette, Roger L.: *See*—
Snow, Frederick O.; Hulette, Roger L.; Martinson, Albert M., Jr.; and Gwyn, Peter, 4,483,655, Cl. 414-786.000.

Hulsebusch, William H.: *See*—
Hostetler, John E.; Hulsebusch, William H.; and Sears, I. Weir, Jr., 4,483,467, Cl. 223-74.000.

Human, Robert J. Cold pack for beverage keg. 4,483,157, Cl. 62-400.000.

Huntjens, Franciscus J.; and Brouwer, Anton H. J., to Akzo N.V. Polyester-ester urethane. 4,483,970, Cl. 525-440.000.

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Betz, Howard T.; and Schulenburg, Edward J., Jr., 4,484,079, Cl. 250-548.000.

Hurlow, Robert H., to Cablecraft, Inc. Dual cable transmission gear-shift mechanism. 4,483,211, Cl. 74-473.00R.

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Hynes, Joseph H.; and Burton, James A., 4,483,542, Cl. 277-31.000.

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Ibbott, Jack K. Spark plug. 4,484,101, Cl. 313-142.000.

Ichihara, Shoichi: *See*—
Ono, Tetsuji; Ichihara, Shoichi; Ohata, Tomohisa; and Terui, Sadao, 4,483,940, Cl. 502-159.000.

Ida, Katsumi: *See*—
Ohashi, Hiroyuki; Takami, Toru; Koyama, Noritoshi; Kogure, Yoshio; and Ida, Katsumi, 4,483,873, Cl. 424-331.000.

Ida, Masatoshi: *See*—
Aoki, Masahiro; Oinoue, Kenichi; Ida, Masatoshi; and Hayashi, Asao, 4,483,602, Cl. 354-402.000.

Idea Research Development Corp.: *See*—
Beetner, Mike, 4,484,220, Cl. 358-190.000.

Idei, Nobuyuki: *See*—
Kimizuka, Masanori; and Idei, Nobuyuki, 4,484,242, Cl. 360-130.210.

Igaki, Seigo; Goto, Yoshiro; and Furukawa, Yasuo, to Fujitsu Limited. Exposure system and method using an electron beam. 4,484,077, Cl. 250-492.200.

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Nakao, Hideo; Fujimoto, Koichi; Ishihara, Sadao; Sugawara, Shinichi; and Igarashi, Isamu, 4,483,855, Cl. 424-246.000.

Igarashi, Tadasu, to Nihon Coyne Kabushiki Kaisha. Flash-back arrestor for dissolved acetylene cylinders. 4,483,461, Cl. 222-3.000.

Igarashi, Yoshiaki: *See*—
Yokobori, Nobuyoshi; Urayama, Masashi; and Igarashi, Yoshiaki, 4,484,235, Cl. 360-10.200.

Iguchi, Masaaki: *See*—
Sakaguchi, Susumu; Watanabe, Kazuyoshi; Ogihara, Masahiro; Ryuoh, Toshihiko; Iguchi, Masaaki; and Yoshida, Norifumi, 4,483,734, Cl. 156-605.000.

Iida, Katsuyoshi, to Mazda Motor Corporation. Control device for multicylinder engine. 4,483,295, Cl. 123-425.000.

Ikeda Bussan Co., Ltd.: *See*—
Terui, Mituru; and Yoshida, Youki, 4,483,565, Cl. 297-410.000.

Ikeda Electric Mfg. Co., Ltd.: *See*—
Kawashima, Junichi, 4,483,306, Cl. 123-631.000.

Imahori, Seiichi: *See*—
Imazeki, Shuji; Mukoh, Akio; Sato, Mikio; Imahori, Seiichi; Kaneko, Masaharu; and Ozawa, Tetsuo, 4,483,593, Cl. 350-349.000.

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Takamura, Tsutomu; Imai, Atsuo; and Suzuki, Nobukazu, 4,483,694, Cl. 55-158.000.

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IMEC Corporation: *See*—
Fulton, Donald E.; and Comstock, Robert H., 4,484,126, Cl. 318-800.000.

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Koide, Tatsushi; Sasatani, Seiei; and Inaba, Kohji, 4,483,846, Cl. 424-19.000.

Inada, Tomoki; Mizuniwa, Seiji; Toyoshima, Toshiya; Fukumoto, Masashi; and Nakagawa, Junkichi, to Hitachi Cable, Ltd. Manufacturing process of semi-insulating gallium arsenide single crystal. 4,483,735, Cl. 156-607.000.

Inagaki, Hazime: *See*—
Ishihara, Toshikazu; and Inagaki, Hazime, 4,484,135, Cl. 324-71.100.

Indra, Fritz: *See*—
Heck, Klaus; Linzenkirchner, Karl; Indra, Fritz; Lindner, Horst; and Munnighoff, Hans, 4,483,755, Cl. 204-129.100.

Inland Steel Company: *See*—
Lyudkovsky, Grigory, 4,483,723, Cl. 148-31.500.

Inoue, Akira: *See*—
Sekido, Yasuo; Inoue, Akira; Mori, Masao; and Kubo, Tatsuki, 4,483,942, Cl. 502-255.000.

Inoue-Japax Research Incorporated: *See*—
Inoue, Kiyoshi, 4,484,052, Cl. 219-69.00M.

Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Cutting method and apparatus. 4,484,052, Cl. 219-69.00M.

Inoue, Masao, to Mitsubishi Denki Kabushiki Kaisha. Magnetic bearing arrangement for an artificial satellite. 4,483,570, Cl. 308-10.000.

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Kobayashi, Hidetoshi; Itoh, Isamu; Yoshioka, Yasuhiro; Mihayashi, Keiji; and Inoue, Noriyuki, 4,483,919, Cl. 430-566.000.

Inoue, Shunzo, to Canon Kabushiki Kaisha. Sheet detecting device. 4,484,070, Cl. 250-223.00R.

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Institut Elektrosvarki Imeni E.O. Patona Akademii Nauk Ukrainskoi SSR: *See*—
Podola, Nikolai V.; Krivonos, Vadim P.; Grabchev, Boris L.; Dovgodko, Evgeny I.; and Kobylin, Alexandr M., 4,484,057, Cl. 219-109.000.

Institut Khimicheskoi Fiziki Akademii Nauk SSSR: *See*—
Adadurov, Gennady A.; Bavina, Tamara V.; Breusov, Oleg N.; Drobyshev, Viktor N.; Messinev, Mikhail J.; Rogacheva, Alexandra I.; Ananiin, Alexandr V.; Apollonov, Vladimir N.; Dremin, Anatoly N.; Doronin, Valentin N.; Dubovitsky, Fedor I.; Zemlyakova, Lidia G.; Pershin, Sergei V.; and Tatsy, Viktor F., 4,483,836, Cl. 423-290.000.

Institute of Gas Technology: *See*—
Patel, Jitendra G., 4,483,692, Cl. 48-210.000.

Intech Systems Corp.: *See*—
Slavin, Martin J., 4,483,346, Cl. 128-710.000.

Intel Corporation: *See*—
Palmer, John; Ravenel, Bruce; and Nave, Rafi, 4,484,259, Cl. 364-754.000.

Intermedicat GmbH: *See*—
Schubert, Ernst W.; and Dorfler, Josef, 4,483,666, Cl. 418-45.000.

International Business Machines Corporation: *See*—
Anderson, Robert W.; Gee, May L.; and McMullen, Alice K., 4,484,304, Cl. 364-900.000.
Bahr, Dietrich J.; and Briska, Marian, 4,483,902, Cl. 428-330.000.
Balderes, Demetrios; Horvath, Joseph L.; and Lipschutz, Lewis D., 4,483,389, Cl. 165-80.00B.
Brende, Arthur P.; and Neubauer, Jerry L., 4,484,241, Cl. 360-105.000.
Cason, William C.; Kuecker, Ward A.; and Herrold, Paul R., 4,484,302, Cl. 364-900.000.
Fletcher, Robert P., 4,484,267, Cl. 364-200.000.
Hong, Se J.; Nair, Ravindra K.; and Shapiro, Eugene, 4,484,292, Cl. 364-491.000.
Isaac, Randall D.; Ning, Tak H.; and Solomon, Paul M., 4,483,726, Cl. 148-187.000.
Lovgren, Jeffrey L.; Thomas, George C.; and Trnka, John T., 4,484,178, Cl. 340-347.0DA.
Magee, Robert A.; and Remsen, Lawrence P., 4,483,040, Cl. 15-302.000.
Vinal, Albert W., 4,484,238, Cl. 360-47.000.

International Flavors & Fragrances Inc.: *See*—
Light, Kenneth K.; Schreiber, William L.; McGhie, Joseph A.; Schreck, Ronald P.; Yoshida, Takao; Schreiber, Loren B.; and Muralidhara, Ranya, 4,483,995, Cl. 549-451.000.

International Standard Electric Corporation: *See*—
Catchpole, Richard J.; Dyke, Peter J.; Farley, Brian S.; and Virdee, Harbhajan S., 4,484,336, Cl. 375-4.000.
Frey, Werner U.; Rometsch, Johannes; and Diem, Hans, 4,483,634, Cl. 400-489.000.

Lansbourn, Edward H.; and Senensieb, Gideon A., 4,484,299, Cl. 364-724.000.
Minks, Werner, 4,484,168, Cl. 335-274.000.
Winner, Ingo; and Bley, Adolf, 4,483,635, Cl. 400-642.000.
International Telephone and Telegraph Corporation: *See—*
Kennedy, Paul G., 4,483,514, Cl. 251-327.000.
Turbak, Albin F.; Snyder, Fred W.; and Sandberg, Karen R., 4,483,743, Cl. 162-100.000.
Inventio AG: *See—*
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Ionescu, Alexandru D., to New England Machinery, Inc. Bottle conveying and cleaning apparatus. 4,483,435, Cl. 198-399.000.
Irikura, Tsutomu, to Matsushita Electric Industrial Co., Ltd. Method for manufacturing solid electrolyte condensers. 4,483,062, Cl. 29-570.000.
Irving, Deborah A. L.; McDonnell, Damien G.; and Raynes, Edward P., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Brittanic Majesty's Government of the. Liquid crystal compositions. 4,483,595, Cl. 350-350.00R.
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Isawa, Kazuo: *See—*
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Isborn, Jack E. Restricted animal trap. 4,483,093, Cl. 43-58.000.
Ishida, Keiichi: *See—*
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Ishida, Matsuhiko, to Mitsubishi Denki Kabushiki Kaisha. Steps in an escalator. 4,483,432, Cl. 198-333.000.
Ishihara, Sadao: *See—*
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Ishihara, Toshikazu; and Inagaki, Hazime, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Hematocrit measuring instrument. 4,484,135, Cl. 324-71.100.
Ishihara, Yasuo: *See—*
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Ishikawa, Norikazu; and Fujisaki, Masanori, to Nippon Carbureter Co., Ltd. Apparatus for regulating fuel supply to liquefied petroleum gas engine. 4,483,303, Cl. 123-527.000.
Ishikawa, Yukio: *See—*
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Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See—*
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Ishimaru, Wataru; and Ohtsuka, Kunio, to Nissan Motor Company, Limited. Transmission with overdrive. 4,483,215, Cl. 74-759.000.
Ishimizu, Hiroshi: *See—*
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Iso, Tadashi: *See—*
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Ito, Hirohisa: *See—*
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Ito, Kouji: *See—*
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Ito, Saburo: *See—*
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Itoh, Ayao: *See—*
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Itoh & Co., Ltd.: *See—*
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Itoh, Isamu: *See—*
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ITT Industries, Inc.: *See—*
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Ade, Rolf; Heimann, Heinz; Kofink, Wolfgang; and Prohaska, Hans, 4,484,094, Cl. 310-43.000.
Blossfeld, Lothar, 4,483,738, Cl. 156-653.000.
Steffes, Helmut, 4,483,144, Cl. 60-548.000.
Ivakhno, Fedor A.: *See—*
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Iwahashi, Koji, to Nippon Electric Co., Ltd. Receiver having switched capacitor filter. 4,484,358, Cl. 455-213.000.
Iwamoto, Taro; and Yamamoto, Hiroshi, to Hitachi, Ltd. Variable configuration track laying vehicle. 4,483,407, Cl. 180-9.500.
Iwao, Jun-ichi; Oya, Masayuki; and Iso, Tadashi, to Santen Pharmaceutical Co., Ltd. Antihypertensive sulfur-containing compounds. 4,483,861, Cl. 424-263.000.
Iwao, Takayuki; Ono, Takemitsu; and Ishikawa, Yukio, to Mitsumi Electric Co., Ltd. Hammer lock releasing mechanism for a printing device. 4,483,249, Cl. 101-93.300.
Iwaya, Shoichi: *See—*
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Talasz, Johann, 4,483,370, Cl. 138-45.000.
Jackson, Leroy H. Fish skinning tool. 4,483,048, Cl. 17-68.000.
Jacobsen, Stephen C.; Knutti, David F.; and Luntz, Richard D., to Motion Control, Inc. Constant tension traction device. 4,483,330, Cl. 128-75.000.
Jacobson, Jeff A. Blind cleaning device. 4,483,037, Cl. 15-210.00A.
Jacobson, Stephen E., to Halcon SD Group, Inc., The. Process for the production of alkylene carbonates and oxides. 4,483,994, Cl. 549-230.000.
Jacobson, Stephen E., to Halcon SD Group, Inc., The. Process for production of olefin oxides and ketones. 4,483,996, Cl. 549-524.000.
Jagannathan, Anand: *See—*
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Jager, Heimo: *See—*
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Jahn, Ulrich: *See—*
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Jahr, Alfred; and Svihel, Wilhelm, to Centrol-Morgardshammer GmbH. Double roller guide for rolling mills. 4,483,169, Cl. 72-250.000.
Jakob, Franz; and Horoldt, Ernst, to Hoechst Aktiengesellschaft. Molding compositions containing triketoimidazolidine precondensates, their use, and a process for preparing a triketoimidazolidine precondensate composite suitable for this purpose. 4,483,947, Cl. 523-156.000.
James, Jr., Robert B., to UOP Inc. Process for catalytic reforming. 4,483,766, Cl. 208-134.000.
James L. Day Co., Inc.: *See—*
Day, James L.; and Seim, Terry D., 4,484,122, Cl. 318-663.000.
Janssen Pharmaceutica N.V.: *See—*
Heeres, Jan; Backx, Leo J. J.; and Mostmans, Joseph H., 4,483,865, Cl. 424-273.00R.
Janssens, Wilhelmus: *See—*
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Japan Atomic Energy Research Institute: *See—*
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Japan Bano'k Co., Ltd.: *See—*
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Japan Inorganic Material Co., Ltd.: *See—*
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Jasch, Hans-Peter: *See—*
Bordien, Edgar; and Jasch, Hans-Peter, 4,483,540, Cl. 277-2.000.
Jefferies, Peter N. Electric drive train for a vehicle. 4,484,083, Cl. 290-45.000.
Jeglum, James K.: *See—*
Rao, Jagdish J.; and Jeglum, James K., 4,483,357, Cl. 137-3.000.
Jelinek, Vaclav: *See—*
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Jeneric Industries, Inc.: *See—*
Prasad, Arun, 4,483,821, Cl. 420-437.000.
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Jenkins, Thomas E.: *See—*
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Jensen, Lyle B.: *See—*
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Jeong, Seo Y.: *See*—
Kim, Wan S.; Jeong, Seo Y.; and McRea, James C., 4,483,792, Cl. 260-112.700.
Jervis B. Webb Company: *See*—
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JLG Industries, Inc.: *See*—
MacDonald, Wayne P.; and Smith, James L., 4,483,109, Cl. 52-1.000.
Jobbagy, Francis M., to Dresser Industries, Inc. Analog-to-digital converter apparatus for condition responsive transducer. 4,484,177, Cl. 340-347.0NT.
Johansson, Ingval: *See*—
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John, Floyd C.; Taylor, Scott R.; and Taggart, Gerald B., to Clear Air, Inc. Incinerator steam generation system. 4,483,258, Cl. 110-235.000.
Johnson, David A., to J.F.S., Inc. Holder for pistol loader and cartridges. 4,483,089, Cl. 42-89.000.
Johnson, Donald R.: *See*—
Chait, Edward M.; Gianelli, Mary L.; and Johnson, Donald R., 4,483,885, Cl. 427-58.000.
Johnson, Kevin K.: *See*—
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Johnson, Owen W.; Miller, Gerald R.; and Beutler, Paul S., to University of Utah Research Foundation. Electrically conductive and corrosion resistant current collector and/or container. 4,483,785, Cl. 252-520.000.
Johnson, Thomas P. Cantilevered mobile marine rig with hydraulic load equalizer. 4,483,644, Cl. 405-201.000.
Johnston, David F. Hi jump step saver standard. 4,483,073, Cl. 33-1.0LE.
Johnston, James R.; and Meiste, Cordell E., to National Manufacturing Co. Pneumatic door closer having resilient braking sleeve and cooperating piston rod incremental braking enlargements. 4,483,044, Cl. 16-70.000.
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Updegrave, William C.; Jones, Charles E.; and Froehlich, Jerome E., 4,483,637, Cl. 402-15.000.
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Jones, Keith A.; and Weeman, John M., to Procter & Gamble Company, The. Concentrated aqueous detergent compositions. 4,483,787, Cl. 252-551.000.
Jones, Marcus C. Tamper-resistant vial. 4,483,449, Cl. 215-250.000.
Jordan, Lester W.: *See*—
Howard, Curtiss G.; Jordan, Lester W.; Yaworsky, Chester E.; and Zampino, Frank L., 4,484,058, Cl. 219-121.0EJ.
Jorgensen, Paul J.: *See*—
Bartlett, Robert W.; and Jorgensen, Paul J., 4,483,720, Cl. 148-6.300.
Jorgenson, Peter L.: *See*—
Gray, James B.; Jorgenson, Peter L.; and Joyce, Robert A., 4,483,896, Cl. 428-200.000.
Jost, Karel: *See*—
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Jotten, Robert H.; and Mader, Gerhard U., to Westinghouse Electric Corp. Vector control system for AC motor drives. 4,484,128, Cl. 318-805.000.
Joyce, Robert A.: *See*—
Gray, James B.; Jorgenson, Peter L.; and Joyce, Robert A., 4,483,896, Cl. 428-200.000.
Joyner, Frederick B.; Trotter, Jimmy R.; and McConnell, Richard L., to Eastman Kodak Company. Emulsifiable polyester waxes. 4,483,969, Cl. 525-437.000.
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Julien, Robert: *See*—
Facon, Michel; and Julien, Robert, 4,484,112, Cl. 315-399.000.
Jungbert, Edward J., Sr. Anti-syphon frost-proof hydrant. 4,483,361, Cl. 137-301.000.
Junger, Martin; and Nieuwkamp, Wolfgang, to Lechler GmbH & Co., KG. Dual-material atomizing nozzle. 4,483,482, Cl. 239-434.000.
Jungverdorben, Hermann-Josef: *See*—
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Jushin, Viktor P.: *See*—
Arkharov, Alexei M.; Desyatov, Alexandr T.; Bondarenko, Vitaly L.; Pronko, Vladimir G.; Krakovsky, Boris D.; Korsakov-Bogatkov, Sergei M.; Jushin, Viktor P.; Kopova, Alexandra M.; Gorodnov, Petr V.; Borisov, Julian Y.; Ermilov, Vadim V.; and Romanteev, Jury P., 4,483,158, Cl. 62-402.000.
Kabelitz, Hans-Peter: *See*—
Berges, Hanns-Peter; Frieden, Peter; and Kabelitz, Hans-Peter, 4,483,667, Cl. 418-84.000.
KabiVitrum AB: *See*—
Svahn, Carl M. E.; Merenyi, Ferenc; Karlsson, Lennart E.; and Hasshoff, Gunnar, 4,483,867, Cl. 424-279.000.
Kabushiki Kaisha Ishida Koki Seisakusho: *See*—
Naito, Kazufumi, 4,484,146, Cl. 330-69.000.
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Nakamura, Takayoshi, 4,483,519, Cl. 254-350.000.
Kabushiki Kaisha Komatsu Seisakusho: *See*—
Minami, Teruo, 4,483,148, Cl. 60-698.000.
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Yamaka, Shiyouichi; and Ueda, Hirohisa, 4,483,326, Cl. 128-4.000.
Kabushiki Kaisha Riken: *See*—
Kobayashi, Daisaku; Itaba, Tsunesaku; and Momose, Yutaka, 4,483,141, Cl. 60-517.000.
Kabushiki Kaisha Sanyo Seiki: *See*—
Hayashi, Masayuki, 4,483,167, Cl. 72-179.000.
Kabushiki Kaisha Sato: *See*—
Sato, Yo; and Kashiwaba, Tadao, 4,483,733, Cl. 156-541.000.
Kabushiki Kaisha Tiyoda Seisakusho: *See*—
Toya, Matsumi; and Takeuchi, Toshiyasu, 4,483,270, Cl. 118-694.000.
Kabushiki Kaisha Toyota Chuo Kenkyusho: *See*—
Ishihara, Toshikazu; and Inagaki, Hazime, 4,484,135, Cl. 324-71.100.
Oshima, Yujiro; Asai, Kiyokazu; and Tokoro, Hiroharu, 4,483,179, Cl. 73-35.000.
Sugiura, Masahiro; Kandori, Toshio; and Doi, Haruo, 4,483,839, Cl. 423-344.000.
Yokoi, Yutaka; and Fujikake, Kenji, 4,483,304, Cl. 123-549.000.
Kaetsu, Isao: *See*—
Asano, Masaharu; Yoshida, Masaru; and Kaetsu, Isao, 4,483,807, Cl. 264-22.000.
Kahl, William G., Jr.; and Baldwin, John, to Cerberus AG. Infrared intrusion detector with beam indicators. 4,484,075, Cl. 250-342.000.
Kaiser, Heinz W. Wind turbine rotor assembly. 4,483,657, Cl. 416-51.000.
Kajima Road Co. Ltd.: *See*—
Shinohara, Kunio; and Kimura, Takeshi, 4,483,620, Cl. 366-7.000.
Kakimoto, Toshihiko, to Nissan Motor Company, Limited. Rubber and fluid type vibration damper. 4,483,521, Cl. 267-8.00R.
Kakizaki, Tetsuji: *See*—
Ohba, Yozo; Toyoda, Takashi; Yamanaka, Masaaki; Hashimoto, Fukashi; and Kakizaki, Tetsuji, 4,483,965, Cl. 525-322.000.
Kalama Chemical, Inc.: *See*—
Marinak, Michael J.; and Simonson, John L., 4,483,993, Cl. 546-345.000.
Kales, Donna R. Hand-held lotion applicator. 4,483,356, Cl. 132-88.700.
Kamada, Hiroshi; and Takayama, Akira, to Alps Electric Co., Ltd. Microwave oscillator. 4,484,162, Cl. 333-219.000.
Kamahora, Fumio: *See*—
Manabe, Takao; Kamahora, Fumio; Yoshida, Tetsu; and Kanemoto, Masakazu, 4,484,118, Cl. 318-561.000.
Kameda, Tsutomu: *See*—
Fujisawa, Mutsuo; Otani, Mitsuru; Ohtsu, Haruhiro; and Kameda, Tsutomu, 4,483,679, Cl. 433-228.000.
Kamiya, Kazuo: *See*—
Kurushima, Tadanori; and Kamiya, Kazuo, 4,483,135, Cl. 57-301.000.
Kamiya, Kingo; and Takagi, Takaaki, to Aisan Kogyo kabushiki Kaisha. Electromagnetic fuel injector. 4,483,485, Cl. 239-585.000.
Kamiyama, Kazuya: *See*—
Sugie, Mamoru; Toyooka, Takashi; Aoki, Hirokazu; and Kamiyama, Kazuya, 4,484,309, Cl. 365-1.000.
Kamohara, Toshiyuki: *See*—
Umeda, Yasukazu; Tajima, Shinobu; and Kamohara, Toshiyuki, 4,483,418, Cl. 187-29.00R.
Kampfer, Helmut; Wendisch, Detlef; and Hase, Marie, to Agfa-Gevaert Aktiengesellschaft. Hydroxy alkane sulfonic acid sulfoalkyl esters. 4,483,799, Cl. 260-456.00R.
Kanayama, Kenji; Sugi, Hidekuni; Ito, Saburo; and Suzuki, Masatoshi, to Nippondenso Co., Ltd. Flat coil for an electric machine. 4,484,097, Cl. 310-268.000.
Kanbe, Junichiro: *See*—
Ogawa, Kyosuke; Shirai, Shigeru; Kanbe, Junichiro; Saitoh, Keishi; and Osato, Yoichi, 4,483,911, Cl. 430-65.000.
Kandori, Toshio: *See*—
Sugiura, Masahiro; Kandori, Toshio; and Doi, Haruo, 4,483,839, Cl. 423-344.000.
Kane, John M.: *See*—
Carr, Albert A.; Farr, Robert A.; and Kane, John M., 4,483,988, Cl. 544-384.000.
Kaneda, Isao, to NEC Home Electronics, Ltd. Discharge lamp lighting device and system. 4,484,107, Cl. 315-176.000.
Kaneda, Naoya: *See*—
Kawai, Tohru; Katsuma, Makoto; Murakami, Hiroyasu; Hiramatsu, Akira; and Kaneda, Naoya, 4,484,099, Cl. 310-317.000.
Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Ando, Masao; Tanaka, Kenkichi; and Sato, Kiroku, 4,483,809, Cl. 264-53.000.
Kaneko, Masaharu: *See*—
Imazeki, Shuji; Mukoh, Akio; Sato, Mikio; Imahori, Seiichi; Kaneko, Masaharu; and Ozawa, Tetsuo, 4,483,593, Cl. 350-349.000.
Kanemoto, Masakazu: *See*—
Manabe, Takao; Kamahora, Fumio; Yoshida, Tetsu; and Kanemoto, Masakazu, 4,484,118, Cl. 318-561.000.

Kanzaki Paper Manufacturing Co., Ltd.: *See*—
Yamamoto, Tohru; and Fujioka, Hironari, 4,484,204, Cl. 346-200.000.

Karlsson, Lennart E.: *See*—
Svahn, Carl M. E.; Merenyi, Ferenc; Karlsson, Lennart E.; and Hanshoff, Gunnar, 4,483,867, Cl. 424-279.000.

Karp, Richard A.: *See*—
Stiffler, Jack J.; Karp, Richard A.; Nolan, James M., Jr.; Budwey, Michael J.; and Wallace, David A., 4,484,273, Cl. 364-200.000.

Kasai, Shunichi; Ogata, Takashi; Tamanoi, Teruo; and Hosaka, Hiroshi, to Nippon Mining Co., Ltd. Process for producing arsenous acid. 4,483,845, Cl. 423-617.000.

Kasday, Leonard R., to AT&T Bell Laboratories. Touch position sensitive surface. 4,484,179, Cl. 340-365.00P.

Kashioka, Seiji, to Hitachi, Ltd. Method of image transformation in a display device. 4,484,347, Cl. 382-47.000.

Kashiwaba, Tadao: *See*—
Sato, Yo; and Kashiwaba, Tadao, 4,483,733, Cl. 156-541.000.

Kassai Kabushikikaisha: *See*—
Kassai, Kenzou, 4,483,026, Cl. 5-99.00R.

Kassai, Kenzou, to Kassai Kabushikikaisha. Crib. 4,483,026, Cl. 5-99.00R.

Kataoka, Akira: *See*—
Sekida, Minoru; Yamaki, Toshio; Fujii, Akira; Matsushita, Shuzo; and Kataoka, Akira, 4,483,601, Cl. 354-288.000.

Kataoka, Ryuji, to Fuji Jukogyo Kabushiki Kaisha; and Nissan Motor Company, Limited. System for controlling an air-fuel ratio. 4,483,296, Cl. 123-440.000.

Kato, Yukio: *See*—
Michishita, Katsumi; Kawano, Mitsugi; Aoshima, Fujio; Kato, Yukio; and Asamoto, Tetsuhiro, 4,484,053, Cl. 219-69.00E.

Katoh, Toshio: *See*—
Ohoka, Masaharu; Katoh, Toshio; Mita, Ryuichi; Kawashima, Nobuyuki; Higuchi, Chojiro; Kawashima, Nobuhiro; Yamaguchi, Akihiro; Nagai, Shousuke; and Takano, Takao, 4,484,003, Cl. 562-574.000.

Katsuma, Makoto: *See*—
Kawai, Tohru; Katsuma, Makoto; Murakami, Hiroyasu; Hiramatsu, Akira; and Kaneda, Naoya, 4,484,099, Cl. 310-317.000.

Katsuta, Susumu; Adachi, Susumu; and Shuji, Hoshino, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha; and Sumitomo Cement Kabushiki Kaisha. Vertical roller mill. 4,483,487, Cl. 241-121.000.

Katsuyama, Toshio: *See*—
Matsumura, Hiroyoshi; Katsuyama, Toshio; and Suganuma, Tsuneo, 4,483,617, Cl. 356-350.000.

Katzin, Lawrence F. Reclosable plastic bag. 4,484,352, Cl. 383-65.000.

Katzman, James A.; Bartlett, Joel F.; Bixler, Richard M.; Davidow, William H.; Despotakis, John A.; Graziano, Peter J.; Green, Michael D.; Greig, David A.; Hayashi, Steven J.; Mackie, David R.; McEvoy, Dennis L.; Treybig, James G.; and Wierenga, Steven W., to Tandem Computers Incorporated. Multiprocessor system. 4,484,275, Cl. 364-200.000.

Kaunassky Politekhnichesky Institut Imeni A. Snechkusa: *See*—
Rudzyanskas, Juozas P.; and Rudzyanskaite, Galina J., 4,483,074, Cl. 33-1.00M.

Kawabata, Yasuhiro: *See*—
Akagi, Motonobu; Kawabata, Yasuhiro; and Hattori, Kyo, 4,483,369, Cl. 137-625.120.

Kawaguchi, Hiroshi: *See*—
Takeuchi, Hiroaki; Kawaguchi, Hiroshi; Nishiwaki, Kiyoshi; Toba, Fujio; and Nomura, Yoshihisa, 4,483,145, Cl. 60-578.000.

Kawai, Kiyoshi: *See*—
Kawai, Kyosuke; Nakagawa, Mitsuru; Yanase, Shinji; and Kawai, Kiyoshi, 4,483,699, Cl. 65-8.000.

Kawai, Kyosuke; Nakagawa, Mitsuru; Yanase, Shinji; and Kawai, Kiyoshi, to Japan Inorganic Material Co., Ltd. Method for producing glass fibers with centrifugal force. 4,483,699, Cl. 65-8.000.

Kawai, Tohru; Katsuma, Makoto; Murakami, Hiroyasu; Hiramatsu, Akira; and Kaneda, Naoya, to Canon Kabushiki Kaisha. Piezoelectric vibration wave motor with multiple traveling wave generating members. 4,484,099, Cl. 310-317.000.

Kawai, Toshio: *See*—
Yamashita, Junichi; Kawai, Toshio; and Yokomi, Michiro, 4,483,818, Cl. 376-435.000.

Kawajiri, Shogo: *See*—
Maekawa, Koji; and Kawajiri, Shogo, 4,483,181, Cl. 73-35.000.

Kawamoto, Kinji: *See*—
Tsukamoto, Masao; Kawamoto, Kinji; and Uya, Masaru, 4,483,229, Cl. 84-1.010.

Kawamura, Hideaki: *See*—
Nagamine, Tsuyoshi; Kawamura, Hideaki; and Miyata, Mitsuto, 4,484,286, Cl. 364-474.000.

Kawanishi, Toshiyuki: *See*—
Tabata, Yukio; and Kawanishi, Toshiyuki, 4,484,200, Cl. 346-76.0PH.

Kawano, Mitsugi: *See*—
Michishita, Katsumi; Kawano, Mitsugi; Aoshima, Fujio; Kato, Yukio; and Asamoto, Tetsuhiro, 4,484,053, Cl. 219-69.00E.

Kawase, Shigeo: *See*—
Tahara, Yoshiyuki; Nagai, Michiko; Kogure, Katsura; Kawase, Shigeo; and Yamaguchi, Teruhito, 4,483,871, Cl. 424-312.000.

Kawashima, Etsuko: *See*—
Kojima, Nobuyuki; and Kawashima, Etsuko, 4,483,313, Cl. 126-92.00R.

Kawashima, Junichi, to Ikeda Electric Mfg. Co., Ltd. Magneto having transistor ignition circuit for engines. 4,483,306, Cl. 123-631.000.

Kawashima, Nobuhiro: *See*—
Ohoka, Masaharu; Katoh, Toshio; Mita, Ryuichi; Kawashima, Nobuyuki; Higuchi, Chojiro; Kawashima, Nobuhiro; Yamaguchi, Akihiro; Nagai, Shousuke; and Takano, Takao, 4,484,003, Cl. 562-574.000.

Kawashima, Nobuyuki: *See*—
Ohoka, Masaharu; Katoh, Toshio; Mita, Ryuichi; Kawashima, Nobuyuki; Higuchi, Chojiro; Kawashima, Nobuhiro; Yamaguchi, Akihiro; Nagai, Shousuke; and Takano, Takao, 4,484,003, Cl. 562-574.000.

Kazarnowicz, Michael C.: *See*—
Luff, Bruce A.; and Kazarnowicz, Michael C., 4,483,488, Cl. 241-23.000.

Kaziwara, Teruhisa: *See*—
Sonoda, Takezo; Shimoyama, Fumioki; Kaziwara, Teruhisa; and Sato, Takahisa, 4,483,843, Cl. 423-573.00R.

Keeton, John H. Automatic sleeve making. 4,483,262, Cl. 112-121.120.

Kelemen, Ladislav, to Firestone Tire & Rubber Company, The. Automatic slack adjuster. 4,483,424, Cl. 188-196.0BA.

Kellar, John D.; and Pereman, Gordon F., to PPG Industries, Inc. Cooling vacuum holder by suction fluid flow. 4,483,701, Cl. 65-106.000.

Kellar, John D.; and Pereman, Gordon F., to PPG Industries, Inc. Deformable vacuum holder with helical coil springs for shaping glass. 4,483,703, Cl. 65-273.000.

Keller, David L. Tool adapter for working table top storage cabinet. 4,483,573, Cl. 312-281.000.

Keller, Victor A.: *See*—
Haines, Maurice S.; and Keller, Victor A., 4,484,055, Cl. 219-86.210.

Kelley, Stephen H.; and Wurzburg, Henry, to Motorola, Inc. Digital loop transceiver having a power up/down circuit. 4,484,028, Cl. 179-2.0DP.

Kellner, Jordan D., to Kendall Company, The. Soil stress test apparatus. 4,483,197, Cl. 73-784.000.

Kelly, James. Heat exchanger. 4,483,310, Cl. 126-35.000.

KemaNord AB: *See*—
Andersson, Bengt, 4,483,889, Cl. 427-389.900.

Kendall Company, The: *See*—
Kellner, Jordan D., 4,483,197, Cl. 73-784.000.

Kennedy, John M.; and Kennedy, William R. Mine stopping and method of and jack for installing same. 4,483,642, Cl. 405-132.000.

Kennedy, Paul G., to International Telephone and Telegraph Corporation. Gate member for resilient-seated gate valve. 4,483,514, Cl. 251-327.000.

Kennedy, William R.: *See*—
Kennedy, John M.; and Kennedy, William R., 4,483,642, Cl. 405-132.000.

Kennelly, James R. Landfill gas well. 4,483,396, Cl. 166-242.000.

Kennelly, Kenneth M. Vacuum/hydraulic control system for speed synchronization of a pair of shafts. 4,483,421, Cl. 188-16.000.

Kenney, David S. Cordless telephone switch and line selector. 4,484,029, Cl. 179-2.0EA.

Kenton, Joseph R., to Phillips Petroleum Company. Olefin aromatization process. 4,484,017, Cl. 585-415.000.

Kerley, Thomas M.: *See*—
Varela, David W., 4,483,630, Cl. 374-119.000.

Kernforschungszentrum Karlsruhe GmbH: *See*—
Kunze, Siegmar; Eden, Gerhard; and Koster, Rainer, 4,483,789, Cl. 252-628.000.

Kerr, Archie F., to AT&T Technologies, Inc. Fail-safe machine control system. 4,484,119, Cl. 318-563.000.

Kerr-McGee Chemical Corporation: *See*—
Laughlin, William C.; Barczak, Virgil J.; Bowerman, Paul D.; and Rado, Theodore A., 4,483,828, Cl. 423-49.000.

Keser, Helmut: *See*—
Bunk, Klaus; Neidig, Arno; Wahl, Georg; and Keser, Helmut, 4,483,810, Cl. 264-60.000.

Ketterer, Stanley J., to Singer Company, The. Hanging bobbin case. 4,483,264, Cl. 112-231.000.

Key Pharmaceuticals, Inc.: *See*—
Diamond, Julius, 4,483,854, Cl. 424-230.000.
Tuttle, Ronald R., 4,483,860, Cl. 424-260.000.

Khanna, Amarpal S.; Guillon, Pierre; and Garault, Yves, to Centre National de la Recherche Scientifique/(C.N.R.S.). Transistor microwave oscillators. 4,484,156, Cl. 331-60.000.

Khismatulin, Enver R.; Shel, Marat M.; Novikov, Alexandr N.; Makarov, Viktor M.; Serov, Petr G.; Trotsenko, Vasily D.; Nikolsky, Sergei I.; and Pimshtein, Pavel G. Device for helically coiling pressure vessel shells. 4,483,166, Cl. 72-137.000.

Kidde, Inc.: *See*—
Bernabe, Vincent, Jr., 4,483,447, Cl. 212-188.000.

Kikuta, Kazutsune: *See*—
Sato, Akihiro; Suzuki, Takeshi; Kikuta, Kazutsune; Chiba, Hiromasa; Uwai, Toshihiro; Matsuda, Kenji; and Hanari, Tohru, 4,483,971, Cl. 526-142.000.

Kilroy, Eugene J.: *See*—
Gabler, Otto L.; Halford, Wayne R.; Kilroy, Eugene J.; and McKittrick, Michael T., 4,483,096, Cl. 446-430.000.

Kim, Wan S.; Jeong, Seo Y.; and McRea, James C. Glycosylated insulin derivatives. 4,483,792, Cl. 260-112.700.

Kimberly-Clark Corporation: *See*—
Bauernfeind, Robert N., 4,483,728, Cl. 156-209.000.

Kimizuka, Masanori; and Idei, Nobuyuki, to Sony Corporation. Tape guide for tensioning tape and regulating the running thereof in a small or mini-cassette. 4,484,242, Cl. 360-130.210.

Kimura, Kenji, to Olympus Optical Co., Ltd. Video tape recording and reproducing apparatus. 4,484,234, Cl. 358-340.000.

Kimura, Takeshi: *See*—
Shinohara, Kunio; and Kimura, Takeshi, 4,483,620, Cl. 366-7.000.

King, William R., to Phillips Petroleum Company. Carbon black production. 4,483,841, Cl. 423-456.000.

Kingport, Ltd.: *See*—
Gerch, Edward L., 4,483,427, Cl. 190-11.000.

Kinney, Thomas B.: *See*—
Fogarty, Thomas J.; and Kinney, Thomas B., 4,483,340, Cl. 128-344.000.

Kinoshita, Mitsuo: *See*—
Gamo, Gotaro; and Kinoshita, Mitsuo, 4,484,287, Cl. 364-474.000.

Kioritz Corporation: *See*—
Nagashima, Akira; and Kondo, Tadashige, 4,483,072, Cl. 30-381.000.

Kirk, Ronald L., to Holotronics Corporation, The. Electronically generated holography. 4,484,219, Cl. 358-90.000.

Kishi, Noriyuki: *See*—
Otobe, Yutaka; and Kishi, Noriyuki, 4,483,299, Cl. 123-479.000.

Kitaigorodsky, Efim A.: *See*—
Zabelin, Igor V.; Ryabukhin, Jury M.; Baibekov, Murat K.; Devyatkin, Vladimir N.; Kitaigorodsky, Efim A.; Kolomiitsev, Arnold V.; Sorokous, Viktor G.; Chalabaev, Ilias A.; Zuev, Nikolai M.; Medeuov, Chaken K.; Chesnokov, Alexandr S.; Usenov, Seisanbai; Tsidrintsev, Grigory V.; Nikolaev, Mikhail M.; Kolyadzin, Alexandr A.; Smorgunov, Boris A.; Chalov, Alexandr V.; Asafiev, Viktor V.; Ladaria, Oleg V.; Vukolov, Vladimir V.; Sabirov, Khamat K.; and Ivakhno, Fedor A., 4,483,753, Cl. 204-70.000.

Kitamura Valve Mfg. Co., Ltd.: *See*—
Kushida, Kazuhiko; and Suyama, Ryoji, 4,483,511, Cl. 251-174.000.

Kiyota, Hiroyuki: *See*—
Nakane, Hisashi; Uehara, Akira; Miyazaki, Shigekazu; Kiyota, Hiroyuki; and Hijikata, Isamu, 4,483,651, Cl. 414-217.000.

Klein, Gerhart P., to Duracell Inc. Electrochemical cell with pressurized liquid electrolyte. 4,483,909, Cl. 429-94.000.

Kline, George A., to Eltech Systems Corporation. Valve metal electrodeposition onto graphite. 4,483,752, Cl. 204-64.00T.

Klingner, Joachim: *See*—
Kuchenthal, Gunther; and Klingner, Joachim, 4,483,698, Cl. 55-238.000.

Klockner-Humboldt-Deutz AG: *See*—
Hass, Eckhard, 4,483,290, Cl. 123-284.000.
Pluequet, Heinz, 4,483,140, Cl. 60-321.000.
Schmidt, Martin; Kohler, Walter; and Abelitis, Andris, 4,483,831, Cl. 423-175.000.

Knappe, Herman E.; and Scott, James W., to Cherry-Burrell Corporation. Actuator mechanism for double-block and vent valve. 4,483,360, Cl. 137-240.000.

Knecht, Rudolf, to G & W Maschinen AG. Device for the automatic anchoring of the outer yarn end of balls in automatic balling machines. 4,483,489, Cl. 242-2.000.

Knipf, Helmut: *See*—
de Jong, Eduard; Hapelt, Karl-Heinz; and Knipf, Helmut, 4,483,975, Cl. 528-288.000.

Knoll, Frederick A., to TEK Precision Co., Ltd. Alignment detection system. 4,483,080, Cl. 33-286.000.

Knoll, Heinz W.: *See*—
Andres, Rudolf; Knoll, Heinz W.; and Petri, Volker, 4,484,041, Cl. 200-61.45M.

Knutti, David F.: *See*—
Jacobsen, Stephen C.; Knutti, David F.; and Luntz, Richard D., 4,483,330, Cl. 128-75.000.

Koala Technologies Corporation: *See*—
Thornburg, David D., 4,484,026, Cl. 178-18.000.

Kobayashi, Daisaku; Itaba, Tsunesaku; and Momose, Yutaka, to Kabushiki Kaisha Riken; and Aisin Seiki Kabushika. Stirling cycle engine having shaft seal means. 4,483,141, Cl. 60-517.000.

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Koch, Christopher E.: *See*—
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Koch, Diether; Gruber, Bruce A.; Langer, Heimo J.; and Dunnavant, William R., to Ashland Oil, Inc. Polymeric cyclopentadiene derivatives, method for preparing and use thereof. 4,483,961, Cl. 524-542.000.

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Gfrerer, Manfred; Jager, Heimo; and Koch, Friedrich, 4,483,708, Cl. 75-10.00R.

Koch, George R.; and Petersen, Carl T., III, to Lam Research Corporation. Workpiece transfer mechanism. 4,483,654, Cl. 414-744.00R.

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Kocsis, Oliver: *See*—
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Koenig, James P.: *See*—
Carmichael, Richard W.; Koenig, James P.; and Johnson, Kevin K., 4,483,430, Cl. 192-91.00A.

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Tahara, Yoshiyuki; Nagai, Michiko; Kogure, Katsura; Kawase, Shigeo; and Yamaguchi, Teruhito, 4,483,871, Cl. 424-312.000.

Kogure, Yoshio: *See*—
Ohashi, Hiroyuki; Takami, Toru; Koyama, Noritoshi; Kogure, Yoshio; and Ida, Katsumi, 4,483,873, Cl. 424-331.000.

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Kohler, Robert D.: *See*—
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Kohler, Walter: *See*—
Schmidt, Martin; Kohler, Walter; and Abelitis, Andris, 4,483,831, Cl. 423-175.000.

Kohn, Gustave K.; and Bamberg, Joe T., to Zoecon Corporation. Alkylthio substituted phenoxy alkanoic acid esters. 4,483,992, Cl. 546-302.000.

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Koishi, Kenji; Yoshida, Tomio; Satoh, Isao; and Harigae, Shunji, to Matsushita Electric Industrial Co., Ltd. Apparatus for locating a track on disc-like optical information carriers. 4,484,319, Cl. 369-46.000.

Koizumi, Yoshihito; Yamada, Kenichi; Sakka, Hiroshi; Yuuda, Mitsuharu; and Yamaguchi, Takeshi, to Riken Vitamin Co. Ltd. Emulsifier composition and quality improvement method of starch containing foods. 4,483,880, Cl. 426-549.000.

Kojima, Nobuyuki; and Kawashima, Etsuko, to Toshiba Heating Appliances Co., Ltd. Reflection type heater. 4,483,313, Cl. 126-92.00R.

Kokusai Denshin Denwq Kabushiki Kaisha: *See*—
Nakagome, Yukio; Amano, Kitsutaro; and Yamamoto, Takaya, 4,484,144, Cl. 330-4.300.

Kolacz, Stephen J. Full view engine cover. 4,483,278, Cl. 123-41.330.

Kolax, Michael: *See*—
Dohle, Gunter; Kolax, Michael; and Hertel, Wolfgang, 4,483,731, Cl. 156-245.000.

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Morino, Ronald, 4,484,054, Cl. 219-85.00M.

Kollner, Harald: *See*—
Blankenburg, Heinz; Schafer, Peter; Marr, Fritz; Kollner, Harald; Grimm, Rainer; Scherf, Wilhelm; and Bohm, Horst, 4,483,100, Cl. 49-352.000.

Kollonitsch, Janos; Marburg, Stephen; and Patchett, Arthur A., to Merck & Co., Inc. α-Difluoromethyl amino acids and hypertension treating compositions thereof. 4,483,870, Cl. 424-309.000.

Kolomiitsev, Arnold V.: *See*—
Zabelin, Igor V.; Ryabukhin, Jury M.; Baibekov, Murat K.; Devyatkin, Vladimir N.; Kitaigorodsky, Efim A.; Kolomiitsev, Arnold V.; Sorokous, Viktor G.; Chalabaev, Ilias A.; Zuev, Nikolai M.; Medeuov, Chaken K.; Chesnokov, Alexandr S.; Usenov, Seisanbai; Tsidrintsev, Grigory V.; Nikolaev, Mikhail M.; Kolyadzin, Alexandr A.; Smorgunov, Boris A.; Chalov, Alexandr V.; Asafiev, Viktor V.; Ladaria, Oleg V.; Vukolov, Vladimir V.; Sabirov, Khamat K.; and Ivakhno, Fedor A., 4,483,753, Cl. 204-70.000.

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Komatsu, Shigeru; Nakamura, Michio; and Fujita, Katsuji, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor device. 4,484,212, Cl. 357-51.000.

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Sisto, Konstantin, 4,483,586, Cl. 350-97.000.

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Suzuki, Takeshi; Shimizu, Hiroshi; Komori, Nobutoshi; Umeno, Takehiro; and Shimizu, Atsuyoshi, 4,483,966, Cl. 525-323.000.

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Yamamoto, Masahiko; Nishino, Yoshinori; Komura, Akio; and Ebisu, Tomio, 4,483,670, Cl. 425-324.100.

Kondo, Kazuo: *See*—
Nishio, Shinji; and Kondo, Kazuo, 4,483,678, Cl. 433-201.000.

Kondo, Tadashige: *See*—
Nagashima, Akira; and Kondo, Tadashige, 4,483,072, Cl. 30-381.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Satoh, Shiroh, 4,483,608, Cl. 355-8.000.
Tomoyori, Kageyuki; Uchida, Tatsuo; and Noda, Tadashi, 4,483,107, Cl. 51-281.00R.
Watanabe, Masato, 4,484,199, Cl. 346-1.100.

Konrath, Karl: *See*—
Eheim, Franz; Hofer, Gerald; Koster, Claus; Konrath, Karl; and Schwarz, Manfred, 4,483,297, Cl. 123-449.000.

Kopova, Alexandra M.: *See*—
Arkharov, Alexei M.; Desyatov, Alexandr T.; Bondarenko, Vitaly L.; Pronko, Vladimir G.; Krakovsky, Boris D.; Korsakov-Bogatkov, Sergei M.; Jushin, Viktor P.; Kopova, Alexandra M.; Gorodnov, Petr V.; Borisov, Julian Y.; Ermilov, Vadim V.; and Romanteev, Jury P., 4,483,158, Cl. 62-402.000.

Kopp, Richard: *See*—
Grogler, Gerhard; Hess, Heinrich; and Kopp, Richard, 4,483,974, Cl. 528-68.000.

Koppen, Earl L.; and Winters, Douglas E., to Koppen, Earl L. Tamper-proof reusable bingo card. 4,483,538, Cl. 273-270.000.

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Minning, Rudolf; Dierkes, Heribert; Korner, Jorg-Peter; and Saamer, Peter, 4,483,458, Cl. 220-320.000.

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Korsmo, Edward S.; and Boedecker, Eugene R., to Xchanger, Inc. Air to air heat exchanger. 4,483,392, Cl. 165-150.000.

Kosaka, Nobuko, legal representative: *See*—
Kosaka, Nobutoshi, deceased; Izawa, Shinichi; and Sugiyama, Jun, 4,483,958, Cl. 524-409.000.

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Kosner, Jerry J., Jr.; Wisniewski, Michael; and Faber, Tom, to Bell & Howell Company. Matrix print head printer. 4,483,633, Cl. 400-82.000.

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Koster, Rainer: *See*—
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Kourimsky, Friedrich J. A.; and Seidel, Klaus G., to AMP Incorporated. Electrical edge connector. 4,483,581, Cl. 339-176.0MP.

Kovacs, Jozsef: *See*—
Olasz, Sandor; Szalay, Denes; Kovacs, Jozsef; and Kocsis, Oliver, 4,483,266, Cl. 112-304.000.

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Ohashi, Hiroyuki; Takami, Toru; Koyama, Noritoshi; Kogure, Yoshio; and Ida, Katsumi, 4,483,873, Cl. 424-331.000.

Koyu Enterprise, Inc.: *See*—
Noda, Takeo; and Tsunaki, Ichiro, 4,483,405, Cl. 180-6.500.

Kraft, Wayne R.: *See*—
Thoma, Nandor G.; Moore, Victor S.; and Kraft, Wayne R., 4,484,268, Cl. 364-200.000.

Krajec, Otmar; and Hellmann, Walter, to Rohm GmbH. Method and apparatus for forming stretched resin sheet. 4,483,814, Cl. 264-230.000.

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Kramer, Dean C.; and Crawford, Jay D., to Martinson Manufacturing Company, Inc. Wire guard device for wells. 4,483,395, Cl. 166-241.000.

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Trudell, Gerald R.; Kraska, Theodore F.; and Barber, Dennis W., 4,483,061, Cl. 29-523.000.

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Kretschmer, Horst: *See*—
Beiermann, Norbert; Scheller, Manfred; Kretschmer, Horst; Noack, Jurgen; Blaschke, Klaus-Dieter; Heinz, Lothar; Gohler, Peter; Schweigel, Hans-Joachim; Deicke, Hanshans-Heinrich; Rudolph, Klaus-Peter; and Flachowsky, Johannes, 4,483,199, Cl. 73-861.040.

Kriete, Richard J.; Orsini, Rafael R.; and Weinglass, Leon, to AT&T Technologies, Inc. Circuit for selectively exciting one of a pair of light emitting diodes. 4,484,105, Cl. 315-133.000.

Kriscunas, Joseph G.: *See*—
Quernemoen, John M.; Voltz, Timothy R.; Campbell, Richard P.; and Kriscunas, Joseph G., 4,484,270, Cl. 364-200.000.

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Krogh, James A., to PPG Industries, Inc. Method for preparing N-benzyloxycarbonyl amino acids containing additional functionality. 4,484,001, Cl. 560-160.000.

Krueger, William R.: *See*—
Cavil, David T.; and Krueger, William R., 4,483,682, Cl. 440-53.000.

Kruger, Manfred; and Schulte Strathaus, Franz E., to F.E. Schulte Strathaus KG. Device for detachable connection, particularly of the ends of high-voltage transmission lines. 4,483,575, Cl. 339-14.00P.

Krumrein, Gerhard; and Hantsch, Hartmut, to Telefunken Electronic GmbH. Circuit for a computerized photoflash control. 4,483,605, Cl. 354-417.000.

Kruschwitz, Werner, to Draftex Development A.G. Window glass mounting arrangements. 4,483,113, Cl. 52-208.000.

Kubis, Charles S.: *See*—
Walter, John; and Kubis, Charles S., 4,483,176, Cl. 72-412.000.

Kubo, Tatsuki: *See*—
Sekido, Yasuo; Inoue, Akira; Mori, Masao; and Kubo, Tatsuki, 4,483,942, Cl. 502-255.000.

Kuchenthal, Gunther; and Klingner, Joachim, to Werner & Pfleiderer. Apparatus for paint mist removal. 4,483,698, Cl. 55-238.000.

Kuecker, Ward A.: *See*—
Cason, William C.; Kuecker, Ward A.; and Herrold, Paul R., 4,484,302, Cl. 364-900.000.

Kuk, Myong S.; Albaugh, Edgar W.; and Montagna, John C., to Gulf Research & Development Company. Removal of nitrogen from a synthetic hydrocarbon oil. 4,483,763, Cl. 208-254.00H.

Kulczyckyj, Antin U.; and Goszyk, Kurt A., to Exide Electronics Corporation. Method and apparatus for controlling access in a data transmission system. 4,484,306, Cl. 364-900.000.

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Kurtz, Anthony D.; Mallon, Joseph R., Jr.; and Nunn, Timothy A., 4,483,196, Cl. 73-730.000.

Kulp, Carl R., Jr.: *See*—
Smith, Howard W.; and Kulp, Carl R., Jr., 4,483,198, Cl. 73-794.000.

Kulwiec, Leonard J.; and Kulwiec, Michael F. X. Flexible clasp for a removable partial dental prosthesis and method of formation of a combined flexible clasp and stress relieving prosthesis. 4,483,677, Cl. 433-170.000.

Kulwiec, Michael F. X.: *See*—
Kulwiec, Leonard J.; and Kulwiec, Michael F. X., 4,483,677, Cl. 433-170.000.

Kumada, Hajime: *See*—
Nogiwa, Masashi; Miyata, Yasunao; Maeda, Tsuyoshi; Kumada, Hajime; and Suzuki, Yoshitaka, 4,483,553, Cl. 280-803.000.

Kumagai, Takashi, to Shinko Engineering Research Corp.; and Mamiya Koki Kabushiki Kaisha (Mamiya Camera Co., Ltd.). Shape detecting device. 4,484,080, Cl. 250-560.000.

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Olsen, Willi; and Kumar, Sreenivasan S., 4,484,047, Cl. 200-148.00F.

Kundin, Jane I. Apparatus and method for measuring deformed areas of skin surface. 4,483,075, Cl. 33-121.000.

Kunz, Walter E.: *See*—
Caldwell, John T.; Kunz, Walter E.; and Atencio, James D., 4,483,816, Cl. 376-158.000.

Kunze, Siegmar; Eden, Gerhard; and Koster, Rainer, to Kernforschungszentrum Karlsruhe GmbH. Method for permanently storing radioactive ion exchanger resins. 4,483,789, Cl. 252-628.000.

Kunzfeld, Wilhelm, to AVL Gesellschaft fur Verbrennungskraftmaschinen und Messtechnik M.B.H.; and Prof.Dr.Dr.h.c.Hans List. Automatic diagnostic device for a four-stroke-internal combustion engine. 4,483,184, Cl. 73-117.200.

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Kurushima, Tadanori; and Kamiya, Kazuo, to Seisakusho Kabushiki Kaisha Toyoda Jidoshokki. Dust-removing mechanism in open-end spinning frame. 4,483,135, Cl. 57-301.000.

Kurzinski, Cass R., to AMB Technology, Inc. System for oscillating mold tube in continuous steel casting machine. 4,483,385, Cl. 164-416.000.

Kushida, Kazuhiko; and Suyama, Ryoji, to Kitamura Valve Mfg. Co., Ltd. Valve assembly including elastic seals. 4,483,511, Cl. 251-174.000.

Kussy, Frank W.: *See—*
McClellan, David P.; and Kussy, Frank W., 4,484,164, Cl. 335-16.000.

Kuwabara, Tetsuo, to Tokyo Kogaku Kikai Kabushiki Kaisha. Infrared reflection-preventing film. 4,483,899, Cl. 428-213.000.

Kuwako, Takashi; and Fujiwara, Takao, to Minolta Camera Kabushiki Kaisha. Toner scattering prevention device. 4,483,606, Cl. 355-3.0DD.

Kydd, Paul H., to HRI, Inc. Multiple thermocouple system for high temperature reactors. 4,483,631, Cl. 374-141.000.

Kysor Industrial Corporation: *See—*
Monigold, Larry E.; and Lewis, Ordale, 4,483,287, Cl. 123-198.0DB.

La-Man Corporation: *See—*
Mann, David O., 4,483,417, Cl. 184-55.200.

LaBate, Michael D. Device for introducing gas into molten metal. 4,483,520, Cl. 266-220.000.

Labita, Leonard. Locking valve. 4,483,366, Cl. 137-385.000.

Lachman, Irwin M.: *See—*
Day, John P.; and Lachman, Irwin M., 4,483,944, Cl. 502-439.000.

Lacroix, Paul: *See—*
Delhay, Jean-Paul; Dumas, Daniel; and Lacroix, Paul, 4,483,840, Cl. 423-445.000.

Ladaria, Oleg V.: *See—*
Zabelin, Igor V.; Ryabukhin, Jury M.; Baibekov, Murat K.; Devyatkin, Vladimir N.; Kitaigorodsky, Efim A.; Kolomiitsev, Arnold V.; Sorokous, Viktor G.; Chalabaev, Ilias A.; Zuev, Nikolai M.; Medeuov, Chaken K.; Chesnokov, Alexandr S.; Usenov, Seisanbai; Tsidrintsev, Grigory V.; Nikolaev, Mikhail M.; Kolyadzin, Alexandr A.; Smorgunov, Boris A.; Chalov, Alexandr V.; Asafiev, Viktor V.; Ladaria, Oleg V.; Vukolov, Vladimir V.; Sabirov, Khamat K.; and Ivakhno, Fedor A., 4,483,753, Cl. 204-70.000.

Laiteries Hubert Triballat: *See—*
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Lakodey, Andre : *See—*
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Lam Research Corporation: *See—*
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Lambay, Patrick: *See—*
Marie, Roland; Locoge, Michel; and Lambay, Patrick, 4,483,638, Cl. 403-20.000.

Lambourn, Edward H.; and Senensieb, Gideon A., to International Standard Electric Corporation. Digital filter arrangement having memory means with addressable words stored therein. 4,484,299, Cl. 364-724.000.

Lang, Gerard; Maignan, Jean; Leveque, Jean-Luc; and Rasseneur, Laurent, to Societe Anonyme dite: L'Oreal. Substituted derivatives of thiamorpholinone. 4,483,983, Cl. 544-58.200.

Langer, Heimo J.: *See—*
Koch, Diether; Gruber, Bruce A.; Langer, Heimo J.; and Dunnavant, William R., 4,483,961, Cl. 524-542.000.

Lapp, Gary F.: *See—*
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Gartner, Roderich; Cornils, Boy; Springer, Helmut; and Lappe, Peter, 4,483,802, Cl. 260-505.00C.

Laseman, Lynn F.; Poulos, Sam; and Dolder, Michael J. Exercise device. 4,483,531, Cl. 272-65.000.

Laughlin, William C.; Barczak, Virgil J.; Bowerman, Paul D.; and Rado, Theodore A., to Kerr-McGee Chemical Corporation. Method of producing manganese sulfate solutions of improved purity. 4,483,828, Cl. 423-49.000.

Laughman, Lanny M.: *See—*
Chenausky, Peter P.; Hart, Richard A.; Laughman, Lanny M.; Belek, Ronald E.; and Wayne, Robert J., 4,484,333, Cl. 372-64.000.

Lawn Doctor, Inc.: *See—*
Magda, Robert J., 4,483,486, Cl. 239-663.000.

Lawrence, David, to Automation Associates, Inc. Fluidic substance dispensing valve. 4,483,465, Cl. 222-83.500.

Layer, Robert W., to B. F. Goodrich Company, The. Hydroxybenzylcyclopentadienes and derivatives thereof. 4,484,010, Cl. 568-732.000.

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Fossati, Roberto; and Lazzari, Vincenzo, 4,484,322, Cl. 370-32.000.

Leavens, Dwight E.: *See—*
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Lebl, Michal: *See—*
Barth, Tomislav; Jost, Karel; Lebl, Michal; Machova , Alena; Servitova , Linda; and Slaninova, Jirina, 4,483,794, Cl. 260-112.50R.

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Junger, Martin; and Nieuwkamp, Wolfgang, 4,483,482, Cl. 239-434.000.

Leclerc, Daniel: *See—*
Flottes, Patrick; and Leclerc, Daniel, 4,484,353, Cl. 455-33.000.

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Ledwith, Walter A., to United Technologies Corporation. Method for making a drum rotor. 4,483,054, Cl. 29-156.80R.

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Lee, Ronald L., to Westinghouse Electric Corp. Phase-locked loop having improved locking capabilities. 4,484,152, Cl. 331-1.00A.

Lee, Roy, Jr. Stabilizers for a steady rest. 4,483,224, Cl. 82-39.000.

le Faou, Daniel: *See—*
Beyl, Jean J. A.; Bernard, Jean; Guerreau, Rene ; le Faou, Daniel; and Peyre, Henri, 4,483,551, Cl. 280-605.000.

Lefferson, Peter: *See—*
Cook, Richard B.; Saravis, Calvin A.; and Lefferson, Peter, 4,484,141, Cl. 324-464.000.

Lefort, Emmanuel: *See—*
Ferrieu, Gilbert M. M.; Hamel, Roger B. J.; Lefort, Emmanuel; and Moliere, Francoise, 4,484,034, Cl. 179-81.00B.

Leightner, Robert A.; and Thibault, Henry, to General Electric Company. Gun sight. 4,483,598, Cl. 350-558.000.

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Beck, Ernst; Lenard, Peter; and Pokorny, Erich, 4,483,217, Cl. 76-75.000.
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Lenz, Bernhard. Process for discontinuous wort boiling during beer manufacture. 4,483,881, Cl. 426-600.000.

Leopold, Kurt E.: *See—*
Taylor, Roderick S.; Leopold, Kurt E.; and Alcock, A. John, 4,484,106, Cl. 315-150.000.

Le Pecq, Jean-Bernard; Paoletti, Claude; and Dat-Xuong, Nguyen, to Agence Nationale de Valorisation de la Recherche (ANVAR). Synthesis of pyrido[4,3-b]carbazole derivatives. 4,483,989, Cl. 546-70.000.

Lepine, Raymond J., Jr.: *See—*
DeBlieux, Paul L.; Lepine, Raymond J., Jr.; Roberts, Reginald F., Jr.; and Young, Arthur J., 4,484,066, Cl. 235-98.00C.

Lepisto, J. George; and Hain, Paul O., to Champion International Corporation. Bag with easy opening closure and handle. 4,483,445, Cl. 206-621.000.

Lepps, Neil O.: *See—*
Madoche, Robert D.; Madoche, Dan C.; Lepps, Neil O.; and Zukowski, Dwayne R., 4,483,363, Cl. 137-329.040.

Lester, Leslie J., to Versatile Corporation. Adjustable billet cutter. 4,483,129, Cl. 56-13.900.

Leuchte, Michael: *See—*
Kohler, Gisbert; and Leuchte, Michael, 4,483,279, Cl. 123-41.650.

Leveque, Jean-Luc; and Gras, Gilbert, to L'Oreal. Apparatus to register the quantity of sebum secreted by a skin. 4,483,619, Cl. 356-434.000.

Leveque, Jean-Luc: *See—*
Lang, Gerard; Maignan, Jean; Leveque, Jean-Luc; and Rasseneur, Laurent, 4,483,983, Cl. 544-58.200.

Lever Brothers Company: *See—*
Cox, Roger B.; and Steer, David C., 4,483,782, Cl. 252-174.170.
Cox, Roger B.; and Steer, David C., 4,483,848, Cl. 424-49.000.

Levine, Elliott M. Rotational wake reaction steps for Foils. 4,483,658, Cl. 416-130.000.

Lewandowski, Alan J.; and Moench, Jerry D., to Motorola, Inc. Serial data mode circuit for a memory. 4,484,308, Cl. 364-900.000.

Lewcock, Ronald B.; and Lyons, James D. Guillotine valve assembly. 4,483,509, Cl. 251-86.000.

Lewis, Idris; Allen, Roy H.; Roscoe, John E.; Churchill, John I.; and Parkes, Ronald A., to Ford Motor Company. Bumper bar for a motor vehicle. 4,483,559, Cl. 293-126.000.

Lewis, Ordale: *See—*
Monigold, Larry E.; and Lewis, Ordale, 4,483,287, Cl. 123-198.0DB.

Leybold-Heraeus GmbH: *See—*
Berges, Hanns-Peter; Frieden, Peter; and Kabelitz, Hans-Peter, 4,483,667, Cl. 418-84.000.

Licari, Yaffa. Rack for a wall-mounted telephone. 4,484,033, Cl. 179-146.00R.

Licentia Patent-Verwaltungs-GmbH: *See—*
Ostermann, Bernd; and Bitzer, Wolfgang, 4,484,025, Cl. 178-22.090.
Unger, Hans-Georg, 4,483,583, Cl. 350-96.150.

Light, Kenneth K.; Schreiber, William L.; McGhie, Joseph A.; Schreck, Ronald P.; Yoshida, Takao; Schreiber, Loren B.; and Muralidhara, Ranya, to International Flavors & Fragrances Inc. Process for producing solanone, norsolanadione and intermediates therefor. 4,483,995, Cl. 549-451.000.

Lillquist, Robert D., to General Electric Company. Infrared sensor for arc welding. 4,484,059, Cl. 219-130.010.

Lin, Jiang-Jen, to Texaco Inc. Process for producing methyl acetate from methanol and carbon monoxide using a novel catalyst system. 4,484,002, Cl. 560-232.000.

Lin, Jiang-Jen: *See—*
Sanderson, John R.; Marquis, Edward T.; and Lin, Jiang-Jen, 4,483,998, Cl. 549-533.000.

Lindholm, Fred A.: *See—*
Neugroschel, Arnost; Pao, Shing-Chong; Lindholm, Fred A.; Fossum, Jerry G.; and Sah, Chih-Tang, 4,483,063, Cl. 29-572.000.

Lindner, Horst: *See—*
Heck, Klaus; Linzenkirchner, Karl; Indra, Fritz; Lindner, Horst; and Munnighoff, Hans, 4,483,755, Cl. 204-129.100.

Linville, Richard D., Jr. Product sorter utilizing a constant percentile weight distribution. 4,483,047, Cl. 17-45.000.

Linzenkirchner, Karl: *See—*
Heck, Klaus; Linzenkirchner, Karl; Indra, Fritz; Lindner, Horst; and Munnighoff, Hans, 4,483,755, Cl. 204-129.100.

Liposome Technology Incorporated: *See—*
Szoka, Frank C., 4,483,929, Cl. 436-533.000.
Lipschutz, Lewis D.: *See—*
Balderes, Demetrios; Horvath, Joseph L.; and Lipschutz, Lewis D., 4,483,389, Cl. 165-80.00B.
List, Harold A. Flexible railway car truck. 4,483,253, Cl. 105-167.000.
Liston, Max D.; and Hsei, Paul K., to American Hospital Supply Corporation. Container for small quantities of liquids. 4,483,616, Cl. 356-246.000.
Litwiller, Donald D., to Compass Enterprises, Inc. Temporary signpost support sleeve and tool for unsetting same. 4,483,506, Cl. 248-545.000.
Liu, Huei-Cheng; and Spohn, Ralph J., to Exxon Research & Engineering Co. Modified zeolite catalyst composition for alkylating toluene with methanol to form styrene. 4,483,936, Cl. 502-74.000.
Liu, Huei-Cheng, to Exxon Research & Engineering Co. Modified zeolite catalyst composition for alkylating toluene with methanol to form styrene. 4,483,937, Cl. 502-73.000.
Liu, Shing-Hou: *See—*
Cardenas, Carlos G.; Ho, Tse-Lok; and Liu, Shing-Hou, 4,484,007, Cl. 568-628.000.
LiVolsi, William J., to Dayco Corporation. Hose clamp for a wire reinforced hose. 4,483,556, Cl. 285-252.000.
Llenado, Ramon A.; and Nicholson, Denzel A., to Procter & Gamble Company, The. Detergent compositions comprising polyglycoside and polyethoxylate surfactants and anionic fluorescer. 4,483,779, Cl. 252-135.000.
Llenado, Ramon A., to Procter & Gamble Company, The. Detergent compositions containing polyglycoside and polyethoxylate detergent surfactants. 4,483,780, Cl. 252-135.000.
Lloyd, Bruce C.: *See—*
Graham, David J.; and Lloyd, Bruce C., 4,483,327, Cl. 128-25.00R.
Lockheed Corporation: *See—*
Brown, William H.; and Ahuja, Krishan K., 4,483,195, Cl. 73-702.000.
Rogers, Philip L., 4,483,614, Cl. 356-28.500.
Lockheed Electronics Corp.: *See—*
Bellew, Francis N., 4,484,193, Cl. 343-5.0SA.
Locoge, Michel: *See—*
Marie, Roland; Locoge, Michel; and Lambay, Patrick, 4,483,638, Cl. 403-20.000.
Logsdon, Gary L.: *See—*
Wilson, Jesse R.; and Logsdon, Gary L., 4,484,325, Cl. 370-60.000.
Lomas, David A.; and Thompson, Gregory J., to UOP Inc. Fluid particle backmixed cooling apparatus. 4,483,276, Cl. 122-4.00D.
Longo, Charles M., to Studio Design, Inc., T/A Rainbow Art Glass. Inside, full 360 degree mold. 4,483,813, Cl. 264-225.000.
Loof, Goran; and Skarin, Lars, to Partex Fabriksaktiebolag. Cable duct. 4,484,020, Cl. 174-68.00C.
Lord Corporation: *See—*
Sadowski, John S., 4,483,962, Cl. 524-552.000.
Lordi, Peter F., to Ulster Manufacturing, Inc. Disposable waste scoop and scraper. 4,483,560, Cl. 294-1.00B.
L'Oreal: *See—*
Leveque, Jean-Luc; and Gras, Gilbert, 4,483,619, Cl. 356-434.000.
Lougheed, Robert M.: *See—*
Sternberg, Stanley R.; Dargel, William O.; Lougheed, Robert M.; McCubbrey, David L.; and Richardson, Ralph E., 4,484,346, Cl. 382-27.000.
Louthan, Rector P., to Phillips Petroleum Company. Combination reaction vessel and aspirator-mixer. 4,483,826, Cl. 422-225.000.
Lovgren, Jeffrey L.; Thomas, George C.; and Trnka, John T., to International Business Machines Corporation. Digital-to-analog converter. 4,484,178, Cl. 340-347.0DA.
Lowndes, Michael W.; Adams, Derek S.; and Arlidge, Neville J., to Lucas Industries Limited. Battery monitoring systems. 4,484,130, Cl. 320-40.000.
Lowther, Frank E., to Atlantic Richfield Company. Method of applying electrical energy to a reactant chamber. 4,483,756, Cl. 204-155.000.
Lu, Shau-Zou: *See—*
Christiansen, John; and Lu, Shau-Zou, 4,483,955, Cl. 524-293.000.
Lubbock Interstate Sales Co., Inc.: *See—*
Forkner, Roy C., 4,483,127, Cl. 53-580.000.
Lubbock Manufacturing Company: *See—*
Rogers, Thelmer A.; and Rogers, Thomas A., 4,483,454, Cl. 220-5.00A.
Lucas, Gary B. Universal spare tire mount for vehicles. 4,483,468, Cl. 224-42.060.
Lucas, Gary M.; and Dziark, John J., to General Electric Company. Adhesion promoters for one-component RTV silicone compositions. 4,483,973, Cl. 528-21.000.
Lucas Industries Limited: *See—*
Lowndes, Michael W.; Adams, Derek S.; and Arlidge, Neville J., 4,484,130, Cl. 320-40.000.
Lucas Industries public limited company: *See—*
Brearley, Malcolm, 4,483,546, Cl. 280-6.00R.
Lucas, James G.; and Young, Alan C., to Commonwealth of Australia, The. Antenna drive arrangement for very high frequency omidirectional range navigation system. 4,484,196, Cl. 343-404.000.
Ludwig, Daniel P.: *See—*
Geesen, Michel; Mourant, Jacques; and Ludwig, Daniel P., 4,484,356, Cl. 455-165.000.
Ludwig, Dieter, to Deere & Company. Pipe coupling. 4,483,555, Cl. 285-169.000.
Luff, Bruce A.; and Kazarnowicz, Michael C., to Air Products and Chemicals, Inc. Method and apparatus for recovering thermoplastic from coated fabric scrap. 4,483,488, Cl. 241-23.000.
Luginbuhl, Rolf W. Device for supplying movable users with a pressure fluid. 4,483,362, Cl. 137-322.000.
Lull, John M.: *See—*
Block, Robert S.; and Lull, John M., 4,484,217, Cl. 358-84.000.
Lundberg, Robert D.; and Phillips, Robert R., to Exxon Research & Engineering Co. Antiplasticization of polymer complexes. 4,483,957, Cl. 524-390.000.
Lundberg, Robert D.: *See—*
Agarwal, Pawan K.; Turner, S. Richard; Lundberg, Robert D.; and Evans, Morris L., 4,483,960, Cl. 524-499.000.
Luniewski, Robert, to Radiation Dynamics, Inc. Method and apparatus for selectively radiating materials with electrons and X-rays. 4,484,341, Cl. 378-69.000.
Luntz, Richard D.: *See—*
Jacobsen, Stephen C.; Knutti, David F.; and Luntz, Richard D., 4,483,330, Cl. 128-75.000.
Lyle, Stephen V.; and Hanscom, Bradford E., to T.A.D. Avanti, Inc. Telephone ring detector system. 4,484,036, Cl. 179-84.00A.
Lynn, Vicki A.: *See—*
Archer, Wesley L.; Dallessandro, Susan M.; and Lynn, Vicki A., 4,483,917, Cl. 430-329.000.
Lyons, James D.: *See—*
Lewcock, Ronald B.; and Lyons, James D., 4,483,509, Cl. 251-86.000.
Lyudkovsky, Grigory, to Inland Steel Company. Steel with antimony addition. 4,483,723, Cl. 148-31.500.
M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
Schwarting, Karl H., 4,483,567, Cl. 299-43.000.
Maag Gear-Wheel & Machine Company Limited: *See—*
Bickel, Hansjorg, 4,483,103, Cl. 51-165.870.
Maass, Hans: *See—*
Eckold, Gerd-Jurgen; and Maass, Hans, 4,483,477, Cl. 228-42.000.
MacDonald, Wayne P.; and Smith, James L., to JLG Industries, Inc. Boom latching system. 4,483,109, Cl. 52-1.000.
Machova , Alena: *See—*
Barth, Tomislav; Jost, Karel; Lebl, Michal; Machova , Alena; Servitova , Linda; and Slaninova, Jirina, 4,483,794, Cl. 260-112.50R.
Mackie, David R.: *See—*
Katzman, James A.; Bartlett, Joel F.; Bixler, Richard M.; Davidow, William H.; Despotakis, John A.; Graziano, Peter J.; Green, Michael D.; Greig, David A.; Hayashi, Steven J.; Mackie, David R.; McEvoy, Dennis L.; Treybig, James G.; and Wierenga, Steven W., 4,484,275, Cl. 364-200.000.
MacRae, Sandy; and Young, Les, to Crystal Audio Visual Products, Ltd. Simultaneous visual and audio signal apparatus. 4,483,599, Cl. 352-22.000.
Maddock, Jr. Alfred W., to Halliburton Company. Surface readout drill stem test control apparatus. 4,483,187, Cl. 73-151.000.
Mader, Gerhard U.: *See—*
Jotten, Robert H.; and Mader, Gerhard U., 4,484,128, Cl. 318-805.000.
Madoche, Dan C.: *See—*
Madoche, Robert D.; Madoche, Dan C.; Lepps, Neil O.; and Zukowski, Dwayne R., 4,483,363, Cl. 137-329.040.
Madoche, Robert D.; Madoche, Dan C.; Lepps, Neil O.; and Zukowski, Dwayne R. Compressor valve. 4,483,363, Cl. 137-329.040.
Maeda, Tsuyoshi: *See—*
Nogiwa, Masashi; Miyata, Yasunao; Maeda, Tsuyoshi; Kumada, Hajime; and Suzuki, Yoshitaka, 4,483,553, Cl. 280-803.000.
Maejima, Masatsugu: *See—*
Murayama, Seizo; Isawa, Kazuo; Maejima, Masatsugu; Usuki, Takayoshi; and Saruwatari, Kohichi, 4,483,751, Cl. 204-37.100.
Maekawa, Koji; and Kawajiri, Shogo, to NGK Spark Plug Co., Ltd. Combustion pressure peak detector for combustion control for an internal combustion engine. 4,483,181, Cl. 73-35.000.
Maekawa, Masakazu: *See—*
Ogata, Yasuhiro; and Maekawa, Masakazu, 4,484,205, Cl. 346-200.000.
Maekawa, Yukio: *See—*
Metabi, Tsuneyo; Maekawa, Yukio; and Ando, Makoto, 4,483,603, Cl. 354-402.000.
Magda, Robert J., to Lawn Doctor, Inc. Method and apparatus for treating lawns with both granular and liquid treatment materials. 4,483,486, Cl. 239-663.000.
Magee, Robert A.; and Remsen, Lawrence P., to International Business Machines Corporation. In-line mask cleaning system. 4,483,040, Cl. 15-302.000.
Mahailet, Jean B.; and Gabriel, Jean P., to Synthelabo. Pharmaceutical compositions containing a fraction extracted from mandassi (*Cyperus articulatus L.*). 4,483,852, Cl. 424-195.000.
Mahle GmbH: *See—*
Herrmann, Rudiger; Schlosser, Detlef; and Wimmer, Heinz, 4,483,286, Cl. 123-193.00P.
Mai, Don L.; and Campbell, Bruce W., to Rockwell International Corporation. Voice operated switch. 4,484,344, Cl. 381-46.000.
Maier, James J.; Woodard, Jeffrey P.; Ferrante, John V.; and Heffron, Michael A., to United States of America, Air Force. Variable data base generator apparatus. 4,484,297, Cl. 364-717.000.
Maignan, Jean: *See—*
Lang, Gerard; Maignan, Jean; Leveque, Jean-Luc; and Rasseneur, Laurent, 4,483,983, Cl. 544-58.200.

Makarov, Viktor M.: *See*—
Khismatulin, Enver R.; Shel, Marat M.; Novikov, Alexandr N.; Makarov, Viktor M.; Serov, Petr G.; Trotsenko, Vasily D.; Nikolsky, Sergei I.; and Pimshtein, Pavel G., 4,483,166, Cl. 72-137.000.

Malcolm, Ronald D.: *See*—
Provanzano, Salvatore R.; Aldrich, Wilbert H.; D'Angelo, Robert A.; Drottar, Emil P.; Finnegan, John J., Jr.; Heom, James; Hill, Lawrence W.; Malcolm, Ronald D.; Nollet, Michael C.; Perlman, Baruch S.; Tressler, Michael B.; Van Schalkwyk, John E.; and Webb, Kincade N., 4,484,303, Cl. 364-900.000.

Malinsky, J. David: *See*—
Yeager, Howard L.; and Malinsky, J. David, 4,483,748, Cl. 204-1.00T.

Mallon, Joseph R., Jr.: *See*—
Kurtz, Anthony D.; Mallon, Joseph R., Jr.; and Nunn, Timothy A., 4,483,196, Cl. 73-730.000.

Mallozzi, Philip J.; and Epstein, Harold M., to Battelle Development Corporation. Providing X-rays. 4,484,339, Cl. 378-82.000.

Maloney, James E.; and McDonell, James A., to Economics Laboratory, Inc. Low-foaming, pH sensitive, alkylamine polyether surface active agents and methods for using. 4,483,741, Cl. 162-5.000.

Mamiya Koki Kabushiki Kaisha (Mamiya Camera Co., Ltd.): *See*—
Kumagai, Takashi, 4,484,080, Cl. 250-560.000.

Manabe, Takao; Kamahora, Fumio; Yoshida, Tetsu; and Kanemoto, Masakazu, to Toshiba Kikai Kabushiki Kaisha. Method and apparatus for measuring a workpiece. 4,484,118, Cl. 318-561.000.

Manchego, Robert: *See*—
Allison, Kenneth L.; Gomez, Helio; and Manchego, Robert, 4,484,342, Cl. 378-168.000.

Mancini, Armen N.: *See*—
Strout, Emery G.; and Mancini, Armen N., 4,484,233, Cl. 358-302.000.

Mangiapane, Philip. Leg exerciser. 4,483,533, Cl. 272-137.000.

Manharth, Gary B.; and Cornell, Jay L., to General Electric Company. Blade assembly for a turbomachine. 4,483,661, Cl. 416-220.00R.

Manitoba Telephone System, The: *See*—
Boland, Peter; Coyne, John; and Gimple, Irving, 4,484,218, Cl. 358-86.000.

Mann, David O., to La-Man Corporation. Airline lubricator. 4,483,417, Cl. 184-55.200.

Manner, James A.: *See*—
Cook, James A., Jr.; and Manner, James A., 4,484,008, Cl. 568-639.000.

Mannesmann Aktiengesellschaft: *See*—
Hennecke, Johannes; Horst, Heinz; and Podellek, Helmut, 4,483,403, Cl. 175-88.000.

Mannessen, Johannes. Combustion engine comprising a vaporizer pressure regulator. 4,483,302, Cl. 123-527.000.

Manning, John D.: *See*—
Briccetti, Mario F.; and Manning, John D., 4,483,388, Cl. 165-2.000.

Manser, Gerald E., to S R I International. Energetic copolymers and method of making same. 4,483,978, Cl. 528-408.000.

Mantei, Thomas D., to University of Cincinnati. Method and apparatus for plasma etching a substrate. 4,483,737, Cl. 156-643.000.

Mao, Mark H. K., to Procter & Gamble Company, The. Polar solvent extraction of colored materials from alkylsaccharides under essentially anhydrous conditions. 4,483,979, Cl. 536-18.600.

Marathon Oil Company: *See*—
Thompson, Timothy J., 4,483,206, Cl. 73-863.850.

Marburg, Stephen: *See*—
Kollonitsch, Janos; Marburg, Stephen; and Patchett, Arthur A., 4,483,870, Cl. 424-309.000.

Marcotte, Bernadine A. Method of coloring hair. 4,483,354, Cl. 132-45.00R.

Maremont Corporation: *See*—
Cubalchini, Joseph, 4,483,377, Cl. 141-349.000.

Margen, Peter, to Sonstore KB. Borehole reservoir. 4,483,318, Cl. 126-400.000.

Marie, Roland; Locoge, Michel; and Lambay, Patrick, to Vallourec. Device for fixing a piercing or expanding plug to a piercing or expanding bar. 4,483,638, Cl. 403-20.000.

Marinak, Michael J.; and Simonson, John L., to Kalama Chemical, Inc. Production of polychlorinated pyridine mixtures by liquid phase chlorination of beta-picoline or beta-picoline hydrochloride. 4,483,993, Cl. 546-345.000.

Maringer, Melvin F.: *See*—
Braus, Harry; Barlow, Anthony; and Maringer, Melvin F., 4,483,954, Cl. 524-261.000.

Marion, Charles P.; and Jahnke, Frederick C., to Texaco Development Corporation. Apparatus for production of synthesis gas from heavy hydrocarbon fuels containing high metal concentrations. 4,483,690, Cl. 48-61.000.

Marotta Scientific Controls, Inc.: *See*—
deVersterre, William I.; and Worden, Donald A., 4,484,285, Cl. 364-472.000.

Marquis, Edward T.: *See*—
Sanderson, John R.; Marquis, Edward T.; and Lin, Jiang-Jen, 4,483,998, Cl. 549-533.000.

Marr, Fritz: *See*—
Blankenburg, Heinz; Schafer, Peter; Marr, Fritz; Kollner, Harald; Grimm, Rainer; Scherf, Wilhelm; and Bohm, Horst, 4,483,100, Cl. 49-352.000.

Mars Limited: *See*—
Taylor, Michael; Withnall, Malcolm D. N.; and Talbot, Michael A., 4,483,459, Cl. 221-14.000.

Marsh, Keith D.; and Erickson, Roy O., to Colt Industries Operating Corp. Gradient power valve assembly. 4,483,508, Cl. 251-61.300.

Marshall, Kenneth H. Production of tubes for dental impressions. 4,483,675, Cl. 433-141.000.

Marshall, Sidney W., to Xerox Corporation. Interface suppression apparatus and method for a linear modulator. 4,483,596, Cl. 350-385.000.

Martenson, Donald S. Free standing stove. 4,483,312, Cl. 126-77.000.

Martin, Jose L. Grease gun filler. 4,483,375, Cl. 141-27.000.

Martinson, Albert M., Jr.: *See*—
Snow, Frederick O.; Hulette, Roger L.; Martinson, Albert M., Jr.; and Gwyn, Peter, 4,483,655, Cl. 414-786.000.

Martinson Manufacturing Company, Inc.: *See*—
Kramer, Dean C.; and Crawford, Jay D., 4,483,395, Cl. 166-241.000.

Marusun Suruga Kogyosho Co., Ltd.: *See*—
Ogawa, Nitsuo; and Shimizu, Akira, 4,483,170, Cl. 72-327.000.

Marx, Daniel R.: *See*—
Too, Elena H.; and Marx, Daniel R., 4,483,739, Cl. 156-656.000.

Maryonovich, Michael C., to Masco Corporation. Lifting jack and cover therefor. 4,483,515, Cl. 254-103.000.

Marziaz, Richard D.: *See*—
Cerwin, Robert J.; and Marziaz, Richard D., 4,483,437, Cl. 206-63.300.

Masahiro, Tazawa, to Showa Musen Kogyo Kabushiki Kaisha. Connector with locking mechanism. 4,483,578, Cl. 339-75.0MP.

Masbruch, Richard D.: *See*—
Waldhauser, Steven J.; and Masbruch, Richard D., 4,483,041, Cl. 15-359.000.

Maschinenfabrik Gehring, Gesellschaft mit beschrankter Haftung & Co. Kommanditgesellschaft: *See*—
Bender, Albert, 4,483,105, Cl. 51-227.00R.

Maschinenfabrik Niehoff KG: *See*—
Engmann, Gunther; Hagen, Werner; and Heider, Hermann, 4,483,490, Cl. 242-25.00R.

Maschmeyer, Donald M.; Fowler, Allan E.; Sims, Steve A.; and White, G. Eldon, to Dow Chemical Company, The. Process for making a mixture of ethylene and butene-1. 4,484,016, Cl. 585-510.000.

Masco Corporation: *See*—
Maryonovich, Michael C., 4,483,515, Cl. 254-103.000.

Maslanka, William W.; and Spence, Gavin G., to Hercules Incorporated. Organic pigments. 4,483,959, Cl. 524-457.000.

Masters, Pamela. Ambient steam capturing device. 4,483,317, Cl. 126-390.000.

Masujima, Sho; Towatari, Yoshishige; Iwaya, Shoichi; Masumura, Hitoshi; Abe, Hisao; and Sakamoto, Norimasa, to TDK Electronics Co., Ltd. Current restriction element responsive to applied voltage. 4,484,251, Cl. 361-321.000.

Masumura, Hitoshi: *See*—
Masujima, Sho; Towatari, Yoshishige; Iwaya, Shoichi; Masumura, Hitoshi; Abe, Hisao; and Sakamoto, Norimasa, 4,484,251, Cl. 361-321.000.

Matsuda, Kenji: *See*—
Sato, Akihiro; Suzuki, Takeshi; Kikuta, Kazutsune; Chiba, Hiromasa; Uwai, Toshihiro; Matsuda, Kenji; and Hanari, Tohru, 4,483,971, Cl. 526-142.000.

Matsui, Fumio: *See*—
Sugisawa, Ko; Matsui, Fumio; Yamamoto, Yozo; Nakanaga, Ryosuke; Takeda, Nobuji; Fujii, Yoshimasa; and Hirano, Yoshitaka, 4,483,879, Cl. 426-451.000.

Matsui, Yasuo, to Alps Electric Co., Ltd. Snap action push button switch. 4,484,042, Cl. 200-67.0DB.

Matsumoto, Hajime; Okada, Kouji; and Sano, Nobuo, to Toybox Corporation. Digital measuring device. 4,483,077, Cl. 33-125.00A.

Matsumoto, Hiroshi: *See*—
Ogata, Masaru; Tawara, Katsuya; Watanabe, Yoshihachi; Matsumoto, Hiroshi; and Takahashi, Toshio, 4,483,866, Cl. 424-273.00R.

Matsumura, Hiroyoshi; Katsuyama, Toshio; and Suganuma, Tsuneo, to Hitachi, Ltd. Optical gyroscope with large propagation constant difference. 4,483,617, Cl. 356-350.000.

Matsumura, Susumu, to Canon Kabushiki Kaisha. Device for detecting a portion of light incident on an image forming optical system. 4,484,072, Cl. 250-237.00G.

Matsushita Electric Industrial Co., Ltd.: *See*—
Irikura, Tsutomu, 4,483,062, Cl. 29-570.000.
Koishi, Kenji; Yoshida, Tomio; Satoh, Isao; and Harigae, Shunji, 4,484,319, Cl. 369-46.000.
Murai, Eiji; Suzuki, Tomiji; Sadamori, Hiroki; and Taguchi, Kazuhito, 4,483,673, Cl. 431-328.000.
Takemoto, Toyoki; Fujita, Tsutomu; Sakai, Hiroyuki; and Yamada, Haruyasu, 4,484,211, Cl. 357-50.000.
Tsukamoto, Masao; Kawamoto, Kinji; and Uya, Masaru, 4,483,229, Cl. 84-1.010.
Ueda, Shigeki, 4,484,065, Cl. 219-492.000.
Yokobori, Nobuyoshi; Urayama, Masashi; and Igarashi, Yoshiaki, 4,484,235, Cl. 360-10.200.

Matsushita, Shuzo: *See*—
Sekida, Minoru; Yamaki, Toshio; Fujii, Akira; Matsushita, Shuzo; and Kataoka, Akira, 4,483,601, Cl. 354-288.000.

Matsuura, Yozo; and Yuasa, Kazuhiro, to Ricoh Company, Ltd. Magnetic cleaning device. 4,483,611, Cl. 355-15.000.

Mattel, Inc.: *See*—
Gabler, Otto L.; Halford, Wayne R.; Kilroy, Eugene J.; and McKittrick, Michael T., 4,483,096, Cl. 446-430.000.

Matth. Hohner AG: *See*—
Deforeit, Christian J., 4,484,180, Cl. 340-365.00S.
Mauser-Werke Oberndorf GmbH: *See*—
Band, Gerhard; Nosges, Hans-Jurgen; and Ross, Gunther, 4,483,079, Cl. 33-174.00L.
Dietrich, Hermann; Nosges, Hans J.; and Band, Gerhard, 4,483,209, Cl. 74-89.150.
Mayer, Rayner M., to British Petroleum Company p.l.c., The. Method for the production of fibre reinforced articles. 4,483,214, Cl. 74-572.000.
Mays, Harry W., to Rheem Manufacturing Company. Salvageable industrial container. 4,483,456, Cl. 220-67.000.
Maytag Company, The: *See*—
Ellingson, David I., 4,483,082, Cl. 34-44.000.
Mayuzumi, Harutaka. Multiple stage speed change gear device. 4,483,210, Cl. 74-360.000.
Mazda Motor Corporation: *See*—
Iida, Katsuyoshi, 4,483,295, Cl. 123-425.000.
Mazin, Moshe; and Engeler, William E., to General Electric Company. CMOS latch cell including five transistors, and static flip-flops employing the cell. 4,484,087, Cl. 307-272.00A.
Mazin, Moshe; and Engeler, William E., to General Electric Company. CMOS Four-transistor reset/set latch. 4,484,088, Cl. 307-279.000.
Mazumder, Ali T., to NCR Canada Ltd - NCR Canada LTEE. Bar code processing apparatus. 4,484,068, Cl. 235-462.000.
McAferty, James M.: *See*—
Cornyn, William S., Jr.; Barrett, John S.; Brabston, Donald C., Jr.; Camana, Peter C.; McAferty, James M.; Nelson, Steven P.; and Schy, Stuart T., 4,484,081, Cl. 250-563.000.
McCain Manufacturing Corporation: *See*—
Bulka, Raymond A.; Higgins, George D.; and McCain, William B., 4,483,526, Cl. 270-54.000.
McCain, William B.: *See*—
Bulka, Raymond A.; Higgins, George D.; and McCain, William B., 4,483,526, Cl. 270-54.000.
McCall, Jerry C., to Mckool, Inc. Thermo-electric cooled motorcycle helmet. 4,483,021, Cl. 2-7.000.
McCandless, Bruce, II, to United States of America, National Aeronautics and Space Administration. Connection system. 4,483,639, Cl. 403-317.000.
McCarthy, Richard M., to R. E. Dietz Company. Rotary beacon. 4,484,175, Cl. 340-84.000.
McClellan, David P.; and Kussy, Frank W., to Siemens-Allis, Inc. Braidless movable contact with wiping action. 4,484,164, Cl. 335-16.000.
McClung, James A.: *See*—
Buiso, Joseph D., Jr.; Doyle, Stephen D.; and McClung, James A., 4,483,172, Cl. 72-349.000.
McConnell, Richard L.: *See*—
Joyner, Frederick B.; Trotter, Jimmy R.; and McConnell, Richard L., 4,483,969, Cl. 525-437.000.
McCubbrey, David L., to Environmental Research Institute of Michigan. Parallel pipeline image processor. 4,484,349, Cl. 382-49.000.
McCubbrey, David L.: *See*—
Sternberg, Stanley R.; Dargel, William O.; Lougheed, Robert M.; McCubbrey, David L.; and Richardson, Ralph E., 4,484,346, Cl. 382-27.000.
McDanco, Inc.: *See*—
McDaniel, David L., 4,483,564, Cl. 294-91.000.
McDaniel, David L., to McDanco, Inc. Oil well sucker rod safety block. 4,483,564, Cl. 294-91.000.
McDaniel, Joe D., Jr.; and Pruitt, Paul L., to Zoecon Corporation. Method for manufacturing and packaging a pet collar. 4,483,123, Cl. 53-428.000.
McDonell, James A.: *See*—
Maloney, James E.; and McDonell, James A., 4,483,741, Cl. 162-5.000.
McDonnell, Damien G.: *See*—
Irving, Deborah A. L.; McDonnell, Damien G.; and Raynes, Edward P., 4,483,595, Cl. 350-350.00R.
McDonnell Douglas Corporation: *See*—
Boehringer, Wilfred E., 4,483,498, Cl. 244-75.00R.
McElligott, Paul J.: *See*—
Gardner, David M.; and McElligott, Paul J., 4,483,757, Cl. 204-158.00R.
McEntire, Edward E.; and Gipson, Robert M., to Texaco Inc. Olefin epoxidation with inorganic metal phosphate enhanced catalyst. 4,483,997, Cl. 549-529.000.
McEvoy, Dennis L.: *See*—
Katzman, James A.; Bartlett, Joel F.; Bixler, Richard M.; Davidow, William H.; Despotakis, John A.; Graziano, Peter J.; Green, Michael D.; Greig, David A.; Hayashi, Steven J.; Mackie, David R.; McEvoy, Dennis L.; Treybig, James G.; and Wierenga, Steven W., 4,484,275, Cl. 364-200.000.
McFall, John D., to Westinghouse Electric Corp. Directional comparison blocking protective relay system. 4,484,245, Cl. 361-68.000.
McGhie, Joseph A.: *See*—
Light, Kenneth K.; Schreiber, William L.; McGhie, Joseph A.; Schreck, Ronald P.; Yoshida, Takao; Schreiber, Loren B.; and Muralidhara, Ranya, 4,483,995, Cl. 549-451.000.
McIntyre, Roger L.; and Reed, Robert H., to Cummins Engine Company, Inc. Transducer calibration verification fixture for multiple spindle torque units. 4,483,177, Cl. 73-1.00C.
McKay, Glen; and Williams, Robert J., to Northern Telecom Limited. Laying of optical waveguides onto a support filament. 4,483,134, Cl. 57-18.000.
McKee, James E. Rodent exterminating apparatus. 4,483,094, Cl. 43-81.000.
McKittrick, Michael T.: *See*—
Gabler, Otto L.; Halford, Wayne R.; Kilroy, Eugene J.; and McKittrick, Michael T., 4,483,096, Cl. 446-430.000.
Mckool, Inc.: *See*—
McCall, Jerry C., 4,483,021, Cl. 2-7.000.
McLoughlin, Robert C. Shielded transformer. 4,484,171, Cl. 336-84.00R.
McLynn, Dennis M., to Pneumo Corporation. Coaxial thermocouple wire. 4,484,018, Cl. 136-230.000.
McManaman, Raymond M.: *See*—
Spencer, William H.; McManaman, Raymond M.; and Teves, Roy A., 4,483,530, Cl. 271-236.000.
McMorrow, Richard H., Jr.; and Haigh, Geoffrey, to Analogic Corporation. Signal amplifier for a signal recording device with magnetic deflection. 4,484,111, Cl. 315-397.000.
McMullen, Alice K.: *See*—
Anderson, Robert W.; Gee, May L.; and McMullen, Alice K., 4,484,304, Cl. 364-900.000.
McNutt, Michael J.: *See*—
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McRea, James C.: *See*—
Kim, Wan S.; Jeong, Seo Y.; and McRea, James C., 4,483,792, Cl. 260-112.700.
McShea, William T., III; and Yarrington, Robert M., to Engelhard Corporation. Production of synthetic natural gas from coal gasification liquid by-products. 4,483,691, Cl. 48-202.000.
McTamaney, Louis S.; Delfino, Allan B.; and Bisbee, Gary W., to FMC Corporation. Method and apparatus for recording and playback of dynagraphs for sucker-rod wells. 4,483,188, Cl. 73-151.000.
Mead Corporation: *See*—
Sanders, Frederick W., 4,483,912, Cl. 430-138.000.
Meadows, Roger D., to Dayco Corporation. Center plate structure for railway vehicle. 4,483,254, Cl. 105-199.00C.
Meadox Medicals, Inc.: *See*—
Hoffman, Harmon L., Jr.; Weinberg, Steven; and Park, John P., 4,483,023, Cl. 3-1.000.
Mechanical Technology Incorporated: *See*—
Corey, John A., 4,483,143, Cl. 60-526.000.
Medeuov, Chaken K.: *See*—
Zabelin, Igor V.; Ryabukhin, Jury M.; Baibekov, Murat K.; Devyatkin, Vladimir N.; Kitaigorodsky, Efim A.; Kolomiitsev, Arnold V.; Sorokous, Viktor G.; Chalabaev, Ilias A.; Zuev, Nikolai M.; Medeuov, Chaken K.; Chesnokov, Alexandr S.; Usenov, Seisanbai; Tsidrintsev, Grigory V.; Nikolaev, Mikhail M.; Kolyadzin, Alexandr A.; Smorgunov, Boris A.; Chalov, Alexandr V.; Asafiev, Viktor V.; Ladaria, Oleg V.; Vukolov, Vladimir V.; Sabirov, Khamat K.; and Ivakhno, Fedor A., 4,483,753, Cl. 204-70.000.
Medical Engineering Corporation: *See*—
Trick, Robert E., 4,483,331, Cl. 128-79.000.
Medisearch PR, Inc.: *See*—
Flick, Roland E.; Wortman, Ronald D.; Fotevski, Krstin; and Whitney, John, 4,483,030, Cl. 5-458.000.
Meinan Machinery Works, Inc.: *See*—
Honda, Noriyuki, 4,483,730, Cl. 156-242.000.
Meiste, Cordell E.: *See*—
Johnston, James R.; and Meiste, Cordell E., 4,483,044, Cl. 16-70.000.
Melchior, Jean; and Andre, Thierry, to Societe pour le Developpement de la Suralimentation HYPERBAR. Supercharged internal combustion engines provided with a cooling system. 4,483,150, Cl. 60-599.000.
Melden, Kurt A.: *See*—
Olson, David E.; Simpson, Peter E.; Melden, Kurt A.; and Dowling, Terence, 4,484,263, Cl. 364-200.000.
Melin, Thomas N.: *See*—
Aikins, Warren A.; and Melin, Thomas N., 4,483,379, Cl. 144-366.000.
Meltz, Gerald: *See*—
Cullen, Donald E.; Grudkowski, Thomas W.; and Meltz, Gerald, 4,484,098, Cl. 310-313.00A.
Menapace, Henry R., to Goodyear Tire & Rubber Company, The. Synthesis of 2-methylbutanal. 4,484,006, Cl. 568-454.000.
Menor, George M.: *See*—
Tayag, Rolando; and Menor, George M., 4,484,078, Cl. 250-505.100.
Merck & Co., Inc.: *See*—
Kollonitsch, Janos; Marburg, Stephen; and Patchett, Arthur A., 4,483,870, Cl. 424-309.000.
Patchett, Arthur A.; and Ruyle, William V., 4,483,850, Cl. 424-177.000.
Saari, Walfred S., 4,483,858, Cl. 424-250.000.
Meredith, David L., to Swimout Overflow Components, Inc. Snap-on gutter cover for swimming pools. 4,483,025, Cl. 4-510.000.
Merenyi, Ferenc: *See*—
Svahn, Carl M. E.; Merenyi, Ferenc; Karlsson, Lennart E.; and Hanshoff, Gunnar, 4,483,867, Cl. 424-279.000.
Merkel, Heinz: *See*—
Stahlecker, Fritz; and Merkel, Heinz, 4,483,136, Cl. 57-401.000.
Merrick Foods, Inc.: *See*—
Zmolek, Alfred J.; and Van Der Voort, Douglas F., 4,483,274, Cl. 119-61.000.

Messerschmitt-Bolkow-Blohm GmbH: *See*—
Engl, Ernst, 4,483,139, Cl. 60-251.000.
Messinev, Mikhail J.: *See*—
Adadurov, Gennady A.; Bavina, Tamara V.; Breusov, Oleg N.; Drobyshev, Viktor N.; Messinev, Mikhail J.; Rogacheva, Alexandra I.; Ananiin, Alexandr V.; Apollonov, Vladimir N.; Dremin, Anatoly N.; Doronin, Valentin N.; Dubovitsky, Fedor I.; Zemlyakova, Lidia G.; Pershin, Sergei V.; and Tatsy, Viktor F., 4,483,836, Cl. 423-290.000.
Metabi, Tsuneyo; Maekawa, Yukio; and Ando, Makoto, to Minolta Camera Kabushiki Kaisha. Automatic focusing arrangement for changing the focus driving direction in accordance with the type of interchangeable optical unit. 4,483,603, Cl. 354-402.000.
Metal Box PLC: *See*—
Franek, Jozef T.; and Porcuznik, Paul, 4,483,171, Cl. 72-347.000.
Metallgesellschaft AG: *See*—
Rolke, Dietrich; Hitzel, Hans; and Brink, Andries, 4,483,772, Cl. 210-601.000.
Metz, Arthur J., to Tektronix, Inc. Bootstrapped shunt feedback amplifier. 4,484,147, Cl. 330-156.000.
Meyer, Jacques, to Chloe Chimie. Hardenable/curable unsaturated polyester based compositions. 4,483,963, Cl. 525-44.000.
Meyer, Theodore O.; and van Ommering, Gerrit, to Ford Aerospace & Communications Corporation. Insulated feedthrough expansion seal. 4,483,065, Cl. 29-623.200.
Meyer, Tracey K. Suntan oil applicator. 4,483,636, Cl. 401-266.000.
Micafil AG: *See*—
Fischer, Bruno; Andretta, Angelo; and Nussbaumer, Manfred, 4,483,433, Cl. 198-339.000.
Michel, Horst-Werner. Apparatus for hardening mold parts made of sand for making metal castings. 4,483,384, Cl. 164-154.000.
Michishita, Katsumi; Kawano, Mitsugi; Aoshima, Fujio; Kato, Yukio; and Asamoto, Tetsuhiro, to Mitsubishi Denki Kabushiki Kaisha; and Nippon Kokan Kabushiki Kaisha. Device for electrical discharge machining of a work in the form of a roll. 4,484,053, Cl. 219-69.00E.
Michon, Patrick; and Vauchy, Jean-Marie, to Societe de Fabrication d'Instruments de Mesure. Sighting and aiming arrangement for use during day or night. 4,483,587, Cl. 350-174.000.
Mifsud, Joseph F., to Exxon Production Research Co. Tunable marine seismic source. 4,483,411, Cl. 181-120.000.
Mihara, Shinichi, to Olympus Optical Co., Ltd. Large aperture ratio telephoto lens system. 4,483,597, Cl. 350-454.000.
Mihayashi, Keiji: *See*—
Kobayashi, Hidetoshi; Itoh, Isamu; Yoshioka, Yasuhiro; Mihayashi, Keiji; and Inoue, Noriyuki, 4,483,919, Cl. 430-566.000.
Miille, Jerry L. Pneumatic-digital converter system and method. 4,483,178, Cl. 73-1.00R.
Miller, Edward B.; and Eichelberger, Charles W., to General Electric Company. Apparatus for controlling distributed electrical loads. 4,484,258, Cl. 364-141.000.
Miller, Gerald R.: *See*—
Johnson, Owen W.; Miller, Gerald R.; and Beutler, Paul S., 4,483,785, Cl. 252-520.000.
Miller, Jeffrey T.: *See*—
Hensley, Albert L., Jr.; Miller, Jeffrey T.; Nevitt, Thomas D.; and Tait, A. Martin, 4,483,764, Cl. 208-111.000.
Miller, Richard D., to RCA Corporation. Regulator for bias current of semiconductor laser diode. 4,484,331, Cl. 372-38.000.
Miller, Richard E.: *See*—
Nall, Lawson H.; and Miller, Richard E., 4,483,223, Cl. 82-4.00C.
Nall, Lawson H.; and Miller, Richard E., 4,483,522, Cl. 269-48.100.
Miller, William R.; and Staats, Peter F., to American Sterilizer Company. Shelf for a steam environment. 4,483,446, Cl. 211-153.000.
Millson, Henry E., Jr.: *See*—
Rueblinger, Carl R., 4,483,112, Cl. 52-94.000.
Milne, David J.: *See*—
Cresswell, Pearson J.; and Milne, David J., 4,483,830, Cl. 423-118.000.
Minami, Teruo, to Kabushiki Kaisha Komatsu Seisakusho. Vehicle speed control device for use in trolley-assisted dump trucks of single phase alternating current system. 4,483,148, Cl. 60-698.000.
Minks, Werner, to International Standard Electric Corporation. Electromagnetic relay. 4,484,168, Cl. 335-274.000.
Minnesota Mining and Manufacturing Company: *See*—
Burbank, John E., III; and Montgomery, John R., 4,483,600, Cl. 353-118.000.
Minning, Rudolf; Dierkes, Heribert; Korner, Jorg-Peter; and Saamer, Peter, to Uhde GmbH. Closure system for pressure vessels. 4,483,458, Cl. 220-320.000.
Minolta Camera Kabushiki Kaisha: *See*—
Kuwako, Takashi; and Fujiwara, Takao, 4,483,606, Cl. 355-3.0DD.
Metabi, Tsuneyo; Maekawa, Yukio; and Ando, Makoto, 4,483,603, Cl. 354-402.000.
Sekida, Minoru; Yamaki, Toshio; Fujii, Akira; Matsushita, Shuzo; and Kataoka, Akira, 4,483,601, Cl. 354-288.000.
Minucciani, Giorgio; and Ercole, Maurizio, to D.E.A. Digital Electronic Automation S.p.A. Dimensional measurement system served by a plurality of operating arms and controlled by a computer system. 4,484,293, Cl. 364-513.000.
Misawa, Yutaka; Takahashi, Masaaki; and Hachino, Hiroaki, to Hitachi, Ltd. pn Junction device with glass moats and a channel stopper region of greater depth than the base pn junction depth. 4,484,214, Cl. 357-52.000.
Mishiro, Shoji, to Tage Electric Co., Ltd. Ultrasonic processing device. 4,483,571, Cl. 310-323.000.
Mita, Ryuichi: *See*—
Ohoka, Masaharu; Katoh, Toshio; Mita, Ryuichi; Kawashima, Nobuyuki; Higuchi, Chojiro; Kawashima, Nobuhiro; Yamaguchi, Akihiro; Nagai, Shousuke; and Takano, Takao, 4,484,003, Cl. 562-574.000.
Mitchell, George H. Device for detection of self-movement. 4,483,536, Cl. 273-183.00E.
Mitchell, Terence G., to British-American Tobacco Company Limited. Tobacco processing. 4,483,353, Cl. 131-297.000.
Mitchell, Tyrone D., to General Electric Company. Integrated crosslinkers and amine functional siloxane scavengers for RTV silicose rubber compositions. 4,483,972, Cl. 528-18.000.
Mito, Kyuichi: *See*—
Aruga, Shiro; Nakano, Kazuaki; Mito, Kyuichi; Mukai, Kei; and Shinkai, Mikio, 4,483,747, Cl. 203-92.000.
Mitsubishi Chemical Industries Limited: *See*—
Imazeki, Shuji; Mukoh, Akio; Sato, Mikio; Imahori, Seiichi; Kaneko, Masaharu; and Ozawa, Tetsuo, 4,483,593, Cl. 350-349.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Akasu, Masahira, 4,483,293, Cl. 123-414.000.
Inoue, Masao, 4,483,570, Cl. 308-10.000.
Ishida, Matsuhiko, 4,483,432, Cl. 198-333.000.
Michishita, Katsumi; Kawano, Mitsugi; Aoshima, Fujio; Kato, Yukio; and Asamoto, Tetsuhiro, 4,484,053, Cl. 219-69.00E.
Nishikawa, Akira, 4,484,169, Cl. 336-57.000.
Sugimoto, Hidehiko, 4,484,257, Cl. 363-124.000.
Umeda, Yasukazu; Tajima, Shinobu; and Kamohara, Toshiyuki, 4,483,418, Cl. 187-29.00R.
Yamada, Shigeo; Takawashi, Tamio; and Sakakibara, Toshimitsu, 4,484,051, Cl. 219-69.00C.
Mitsubishi Jukogyo K.K.: *See*—
Takahashi, Hisayoshi; and Oda, Shoichi, 4,483,216, Cl. 74-798.000.
Mitsubishi Monsanto Chemical Co., Ltd.: *See*—
Orito, Fumio, 4,483,736, Cl. 156-616.00A.
Mitsubishi Petrochemical Co., Ltd.: *See*—
Ohba, Yozo; Toyoda, Takashi; Yamanaka, Masaaki; Hashimoto, Fukashi; and Kakizaki, Tetsuji, 4,483,965, Cl. 525-322.000.
Mitsui Toatsu Chemicals, Incorporated: *See*—
Ohoka, Masaharu; Katoh, Toshio; Mita, Ryuichi; Kawashima, Nobuyuki; Higuchi, Chojiro; Kawashima, Nobuhiro; Yamaguchi, Akihiro; Nagai, Shousuke; and Takano, Takao, 4,484,003, Cl. 562-574.000.
Mitsumi Electric Co., Ltd.: *See*—
Iwao, Takayuki; Ono, Takemitsu; and Ishikawa, Yukio, 4,483,249, Cl. 101-93.300.
Miu, Ming T.; Bradley, John J.; and Shen, Jian-Kuo, to Honeywell Information Systems Inc. Microprogrammed system having hardware interrupt apparatus. 4,484,271, Cl. 364-200.000.
Miwa, Hirohide, to Fujitsu Limited. Pressure measuring system with ultrasonic wave. 4,483,345, Cl. 128-662.000.
Miwa, Kenji; and Hashimoto, Noriyoshi, to Nippon Kogaku K. K. Apparatus for conveying semiconductor substrates. 4,483,434, Cl. 198-394.000.
Miyata, Mitsuto: *See*—
Nagamine, Tsuyoshi; Kawamura, Hideaki; and Miyata, Mitsuto, 4,484,286, Cl. 364-474.000.
Miyata, Yasunao: *See*—
Nogiwa, Masashi; Miyata, Yasunao; Maeda, Tsuyoshi; Kumada, Hajime; and Suzuki, Yoshitaka, 4,483,553, Cl. 280-803.000.
Miyazaki, Shigekazu: *See*—
Nakane, Hisashi; Uehara, Akira; Miyazaki, Shigekazu; Kiyota, Hiroyuki; and Hijikata, Isamu, 4,483,651, Cl. 414-217.000.
Mizuniwa, Seiji: *See*—
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Mizuno Corporation: *See*—
Aoki, Katsumi, 4,483,022, Cl. 2-19.000.
Mobil Oil Corporation: *See*—
Seal, Henry, 4,483,189, Cl. 73-155.000.
Shim, Joosup, 4,483,777, Cl. 252-49.500.
Tabak, Samuel A.; and Holland, Robert E., 4,483,760, Cl. 208-60.000.
Moebius, Kurt O.: *See*—
Schwalm, Dieter; and Neumann, Rainer, 4,483,056, Cl. 29-237.000.
Moench, Jerry D.: *See*—
Lewandowski, Alan J.; and Moench, Jerry D., 4,484,308, Cl. 364-900.000.
Molayem, Benjamin; and Garrett, David, to Benmol Corporation. Method and composition for removal of gaseous contaminants produced in combustion of fossil fuels or present in reducing gases. 4,483,259, Cl. 110-345.000.
Moliere, Francoise: *See*—
Ferrieu, Gilbert M. M.; Hamel, Roger B. J.; Lefort, Emmanuel; and Moliere, Francoise, 4,484,034, Cl. 179-81.00B.
Molinelli, John J.: *See*—
Berenbaum, Alan D.; Jagannathan, Asand; Molinelli, John J.; and Pekarich, Steven P., 4,484,274, Cl. 364-200.000.
Molins Limited: *See*—
Dyett, Derek H.; and Horsley, John K., 4,483,349, Cl. 131-94.000.
Mollerstrom, Sten, to Alsaol Dasolas AB. Screen or louvre structure. 4,483,111, Cl. 52-74.000.
Momose, Yutaka: *See*—
Kobayashi, Daisaku; Itaba, Tsunesaku; and Momose, Yutaka, 4,483,141, Cl. 60-517.000.

Monarch Marking Systems, Inc.: *See*—
Hamisch, Paul H., Jr., 4,483,053, Cl. 29-148.40D.

Monigold, Larry E.; and Lewis, Ordale, to Kysor Industrial Corporation. Mechanical engine protection system. 4,483,287, Cl. 123-198.0DB.

Monsanto Co.: *See*—
Purdum, William R., 4,483,705, Cl. 71-086.000.

Montagna, John C.: *See*—
Kuk, Myong S.; Albaugh, Edgar W.; and Montagna, John C., 4,483,763, Cl. 208-254.00H.

Montemayor, Wilfred E.: *See*—
Eidschun, Harry L.; and Montemayor, Wilfred E., 4,483,271, Cl. 118-698.000.

Montgomery, John R.: *See*—
Burbank, John E., III; and Montgomery, John R., 4,483,600, Cl. 353-118.000.

Moore Business Forms, Inc.: *See*—
Updegrave, William C.; Jones, Charles E.; and Froehlich, Jerome E., 4,483,637, Cl. 402-15.000.

Moore, Robert J., to Emerson Electric Co. Apparatus for cutting vegetation. 4,483,069, Cl. 30-276.000.

Moore, Victor S.: *See*—
Thoma, Nandor G.; Moore, Victor S.; and Kraft, Wayne R., 4,484,268, Cl. 364-200.000.

Moore, William P., to Hawkeye Chemical Company. Method of producing silage. 4,483,877, Cl. 426-54.000.

Moores, Robert G., Jr.: *See*—
Sauerwein, William D.; Dibbern, John E., Jr.; O'Hara, Frank J.; and Moores, Robert G., Jr., 4,484,096, Cl. 310-260.000.

More, Henry S.; and Koch, Christopher E., to Exploration Logging, Inc. Well logging apparatus and method for making same. 4,483,393, Cl. 166-65.00R.

Morey, Gilles M. Method and system for detection of the presence, removal, or absence of a metal body. 4,484,183, Cl. 340-568.000.

Mori, Kinya, to Sanyo Machine Works, Limited. Water heating apparatus. 4,483,322, Cl. 126-437.000.

Mori, Masao: *See*—
Sekido, Yasuo; Inoue, Akira; Mori, Masao; and Kubo, Tatsuki, 4,483,942, Cl. 502-255.000.

Moriconi, Emil: *See*—
Doswald, Paul; Moriconi, Emil; Moser, Helmut; and Schmid, Horst, 4,483,796, Cl. 534-604.000.

Morikawa, Koji, to Fuji Jukogyo Kabushiki Kaisha. System for controlling the supercharging pressure of a turbocharged internal combustion engine having means for sensing cylinder pressure. 4,483,146, Cl. 60-602.000.

Morino, Ronald, to Kollmorgen Technologies Corporation. Short pulse soldering system. 4,484,054, Cl. 219-85.00M.

Morita, Masahiro: *See*—
Fujisaki, Masaru; Tsuchida, Tetsuo; Sasajima, Yoichi; Ito, Hirohisa; and Morita, Masahiro, 4,483,729, Cl. 156-222.000.

Morita, Takayuki: *See*—
Fujioka, Kenji; Morita, Takayuki; Fujiwara, Kenichi; and Ito, Kouji, 4,483,151, Cl. 62-157.000.

Morita, Yutaka, to Victor Company of Japan, Limited. Circuit arrangement and method for detecting unrecorded zones of a phonograph record. 4,484,318, Cl. 369-41.000.

Moriyama, Takashi, to Denka Consultant & Engineering Co., Ltd. Apparatus for distributing powdered particles. 4,483,646, Cl. 406-14.000.

Moroshima, Heiji; Terakado, Hajime; and Fujii, Hideharu, to Hitachi, Ltd. Zener diode with protective PN junction portions. 4,484,206, Cl. 357-13.000.

Morozumi, Tokuro: *See*—
Suzuki, Hitoshi; and Morozumi, Tokuro, 4,483,183, Cl. 73-116.000.

Moser, Helmut: *See*—
Doswald, Paul; Moriconi, Emil; Moser, Helmut; and Schmid, Horst, 4,483,796, Cl. 534-604.000.

Mosley, William H.; and Sanders, David E., to E-Systems, Inc. Method and apparatus for despreading a spread spectrum signal at baseband. 4,484,335, Cl. 375-1.000.

Moss, Anthony R. L., to U.S. Philips Corporation. Adjustable slit assembly for a monochromator. 4,483,590, Cl. 350-273.000.

Moss, Theron C.; and Tomm, Erwin, to Seco Industries, Inc. Wet mop holder. 4,483,035, Cl. 15-153.000.

Mostmans, Joseph H.: *See*—
Heeres, Jan; Backx, Leo J. J.; and Mostmans, Joseph H., 4,483,865, Cl. 424-273.00R.

Motion Control, Inc.: *See*—
Jacobsen, Stephen C.; Knutti, David F.; and Luntz, Richard D., 4,483,330, Cl. 128-75.000.

Motoki, Hideo, to Shikoku Kaken Kogyo Kabushiki Kaisha. Compositions for preparing inorganic foamed bodies. 4,483,713, Cl. 106-75.000.

Motorola, Inc.: *See*—
Bennett, Robert M.; and Chapman, Ronald H., 4,484,354, Cl. 455-35.000.
Borras, Jaime A.; Gonzalez, Ruben J.; Smith, Daniel M.; Suarez, Jose I.; Victor, Alan M.; and Wieczorek, Alfred B., 4,484,153, Cl. 331-10.000.
Campbell, Jules D., Jr., 4,484,092, Cl. 307-578.000.
Fedde, Chris S., 4,484,357, Cl. 455-166.000.
Kelley, Stephen H.; and Wurzburg, Henry, 4,484,028, Cl. 179-2.0DP.
Lewandowski, Alan J.; and Moench, Jerry D., 4,484,308, Cl. 364-900.000.

Motosaka, Katsuo: *See*—
Abe, Masahiro; and Motosaka, Katsuo, 4,483,656, Cl. 415-53.00T.

Mott, Richard C., to Honeywell Inc. Adjustably tiltable pneumatic device. 4,483,358, Cl. 137-39.000.

Mouldmaking Design Centre Limited: *See*—
Gahan, Geoffrey D., 4,483,503, Cl. 248-349.000.

Mourant, Jacques: *See*—
Geesen, Michel; Mourant, Jacques; and Ludwig, Daniel P., 4,484,356, Cl. 455-165.000.

Moy, Gar, to AT&T Bell Laboratories. Majority vote circuit. 4,484,330, Cl. 371-36.000.

Mueller, Martin: *See*—
Mueller, Martin J.; and Mueller, Martin, 4,483,239, Cl. 99-340.000.

Mueller, Martin J.; and Mueller, Martin. Cooking grill adapter. 4,483,239, Cl. 99-340.000.

Muhi, Charles; Hamernik, Peter; and Szczecko, Miguel. Drink identifying mixer. 4,483,622, Cl. 366-129.000.

Mukai, Kei: *See*—
Aruga, Shiro; Nakano, Kazuaki; Mito, Kyuichi; Mukai, Kei; and Shinkai, Mikio, 4,483,747, Cl. 203-92.000.

Mukharlyamov, Nurmukhamed M.: *See*—
Atkov, Oleg J.; Popov, Anatoly V.; Mukharlyamov, Nurmukhamed M.; Baranov, Vladimir F.; Belenkov, Jury N.; Frolov, Alexandr N.; Odintsov, Nikolai G.; and Fomina, Galina A., 4,483,344, Cl. 128-661.000.

Mukoh, Akio: *See*—
Imazeki, Shuji; Mukoh, Akio; Sato, Mikio; Imahori, Seiichi; Kaneko, Masaharu; and Ozawa, Tetsuo, 4,483,593, Cl. 350-349.000.

Muller, Jacques; and Schaffner, Jean-Claude, to ETA S.A., Fabriques d'Ebauches. Electronic timepiece. 4,483,627, Cl. 368-76.000.

Munnighoff, Hans: *See*—
Heck, Klaus; Linzenkirchner, Karl; Indra, Fritz; Lindner, Horst; and Munnighoff, Hans, 4,483,755, Cl. 204-129.100.

Murai, Eiji; Suzuki, Tomiji; Sadamori, Hiroki; and Taguchi, Kazuhito, to Matsushita Electric Industrial Co., Ltd.; and Osaka Gas Company, Ltd. Catalytic combustion arrangement. 4,483,673, Cl. 431-328.000.

Murakami, Hiroyasu: *See*—
Kawai, Tohru; Katsuma, Makoto; Murakami, Hiroyasu; Hiramatsu, Akira; and Kaneda, Naoya, 4,484,099, Cl. 310-317.000.

Muralidhara, Ranya: *See*—
Light, Kenneth K.; Schreiber, William L.; McGhie, Joseph A.; Schreck, Ronald P.; Yoshida, Takao; Schreiber, Loren B.; and Muralidhara, Ranya, 4,483,995, Cl. 549-451.000.

Murata Manufacturing Co., Ltd.: *See*—
Kobayashi, Takashi; and Nishii, Motoi, 4,483,933, Cl. 501-138.000.

Murata, Nobuo: *See*—
Sato, Kazuhiro; Murata, Nobuo; Takahashi, Kenji; and Nagahara, Shusaku, 4,484,224, Cl. 358-213.000.

Murayama, Seizo; Isawa, Kazuo; Maejima, Masatsugu; Usuki, Takayoshi; and Saruwatari, Kohichi, to Fujikura Cable Works, Ltd. Process of treating a nodic oxide film, printed wiring board and process of making the same. 4,483,751, Cl. 204-37.100.

Murley, Jackie D.: *See*—
Hahn, Granville J.; Rutledge, Raleigh N.; and Murley, Jackie D., 4,483,669, Cl. 425-131.100.
Hahn, Granville J.; Rutledge, Raleigh N.; and Murley, Jackie D., 4,483,812, Cl. 264-171.000.

Murphy, Lawrence M., to United States of America, Energy. Tensioning device for a stretched membrane collector. 4,483,323, Cl. 126-438.000.

Murphy, Patrick N., to Crown Zellerbach Corporation. Water-borne laminating ink. 4,483,712, Cl. 106-30.000.

Murray, Jerome L. Coffee roaster. 4,484,064, Cl. 219-400.000.

Murray, William M. External fixation device. 4,483,334, Cl. 128-92.00A.

Musick, Jeff L.; Blaker, Robert D.; and Blaker, David G., Jr., to Bed-Check Corporation. Switch apparatus responsive to pressure or distortion. 4,484,043, Cl. 200-85.00R.

Muto, Kenji, to Nippon Gakki Seizo Kabushiki Kaisha. Apparatus for automatically setting the optimum performance characteristics of a tape recorder. 4,484,237, Cl. 360-25.000.

Muto, Masahito, to Toyota Jidosha Kogyo Kabushiki Kaisha. Vehicle speed control method. 4,484,279, Cl. 364-426.000.

Myers, H. Allen, to Sundstrand Corporation. Output speed droop compensating pump control. 4,483,663, Cl. 417-222.000.

Myrid Concepts Corporation: *See*—
Story, Joe B., 4,483,572, Cl. 312-196.000.

Nagahara, Shusaku: *See*—
Sato, Kazuhiro; Murata, Nobuo; Takahashi, Kenji; and Nagahara, Shusaku, 4,484,224, Cl. 358-213.000.

Nagai, Michiko: *See*—
Tahara, Yoshiyuki; Nagai, Michiko; Kogure, Katsura; Kawase, Shigeo; and Yamaguchi, Teruhito, 4,483,871, Cl. 424-312.000.

Nagai, Shousuke: *See*—
Ohoka, Masaharu; Katoh, Toshio; Mita, Ryuichi; Kawashima, Nobuyuki; Higuchi, Chojiro; Kawashima, Nobuhiro; Yamaguchi, Akihiro; Nagai, Shousuke; and Takano, Takao, 4,484,003, Cl. 562-574.000.

Nagamine, Tsuyoshi; Kawamura, Hideaki; and Miyata, Mitsuto, to Fujitsu Fanuc Limited. Numerical control system. 4,484,286, Cl. 364-474.000.

Nagano, Katsumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Exclusive-OR circuit. 4,484,091, Cl. 307-471.000.

Nagasawa, Shiro: *See*—
Yamada, Yasuo; Nagasawa, Shiro; Niwa, Takao; and Gouno, Takeshi, 4,483,301, Cl. 123-489.000.

Nagashima, Akira; and Kondo, Tadashige, to Kioritz Corporation. Machine with liquid crystal display. 4,483,072, Cl. 30-381.000.
Nagayama, Haruhiko, to Ricoh Company, Ltd. Recording system. 4,483,607, Cl. 355-3.0TR.
Nair, Ravindra K.: *See*—
Hong, Se J.; Nair, Ravindra K.; and Shapiro, Eugene, 4,484,292, Cl. 364-491.000.
Naito, Hideki; Hara, Hiroshi; and Sato, Kozo, to Fuji Photo Film Co., Ltd. Heat-developable color photographic material. 4,483,914, Cl. 430-203.000.
Naito, Kazufumi, to Kabushiki Kaisha Ishida Koki Seisakusho. Differential amplifier containing a low-pass filter. 4,484,146, Cl. 330-69.000.
Naito, Yoshihiro: *See*—
Tsunekawa, Masura; and Naito, Yoshihiro, 4,483,142, Cl. 60-521.000.
Nakagawa, Junkichi: *See*—
Inada, Tomoki; Mizuniwa, Seiji; Toyoshima, Toshiya; Fukumoto, Masashi; and Nakagawa, Junkichi, 4,483,735, Cl. 156-607.000.
Nakagawa, Mitsuru: *See*—
Kawai, Kyosuke; Nakagawa, Mitsuru; Yanase, Shinji; and Kawai, Kiyoshi, 4,483,699, Cl. 65-8.000.
Nakagawa, Susumu. Acoustic vermin-repellent device. 4,484,316, Cl. 367-139.000.
Nakagome, Yukio; Amano, Kitsutaro; and Yamamoto, Takaya, to Kokusai Denshin Denwq Kabushiki Kaisha. Semiconductor light amplifier. 4,484,144, Cl. 330-4.300.
Nakajima, Sadaaki: *See*—
Fujimura, Isao; Nakajima, Sadaaki; Abe, Morio; and Taniguchi, Masahiko, 4,483,897, Cl. 428-288.000.
Nakamura, Keijiroh: *See*—
Tsuji, Nobuhiko; Nakamura, Keijiroh; Endoh, Koichi; Hamada, Toshiyoshi; and Ishida, Keiichi, 4,483,924, Cl. 435-288.000.
Nakamura, Michio: *See*—
Komatsu, Shigeru; Nakamura, Michio; and Fujita, Katsuji, 4,484,212, Cl. 357-51.000.
Nakamura, Shuji, to Tokyo Aircraft Instrument Co., Ltd. Airspeed indicator for low-speed conveyances. 4,483,191, Cl. 73-187.000.
Nakamura, Takayoshi, to Kabushiki Kaisha Kito. Idling device for lever hoist. 4,483,519, Cl. 254-350.000.
Nakanaga, Ryusuke: *See*—
Suginawa, Ko; Matsui, Fumio; Yamamoto, Yozo; Nakanaga, Ryusuke; Takeda, Nobuji; Fujii, Yoshimasa; and Hirano, Yoshitaka, 4,483,879, Cl. 426-451.000.
Nakane, Hisashi; Uehara, Akira; Miyazaki, Shigekazu; Kiyota, Hiroyuki; and Hijikata, Isamu, to Tokyo Ohka Kogyo Kabushiki Kaisha. Automatic apparatus for continuous treatment of leaf materials with gas plasma. 4,483,651, Cl. 414-217.000.
Nakano, Kazuaki: *See*—
Aruga, Shiro; Nakano, Kazuaki; Mito, Kyuichi; Mukai, Kei; and Shinkai, Mikio, 4,483,747, Cl. 203-92.000.
Nakano, Masao: *See*—
Nakano, Tomio; Nakano, Masao; Takemae, Yoshihiro; Tsuge, Norihisa; and Ohira, Tsuyoshi, 4,484,312, Cl. 365-233.000.
Nakano, Tomio; Nakano, Masao; Takemae, Yoshihiro; Tsuge, Norihisa; and Ohira, Tsuyoshi, to Fujitsu Limited. Dynamic random access memory device. 4,484,312, Cl. 365-233.000.
Nakao, Hideo; Fujimoto, Koichi; Ishihara, Sadao; Sugawara, Shinichi; and Igarashi, Isamu, to Sankyo Company Limited. Cephalosporin derivative and antibiotic compositions. 4,483,855, Cl. 424-246.000.
Nakatsugawa, Hiroshi, to Furukawa Circuit Foil Co., Ltd. Copper foil for a printed circuit and a method for the production thereof. 4,483,906, Cl. 428-607.000.
Nakauchi, Kenji: *See*—
Tokuda, Kanji; and Nakauchi, Kenji, 4,483,492, Cl. 242-57.000.
Nalco Chemical Company: *See*—
Payne, Charles C., 4,483,765, Cl. 208-120.000.
Nall, Lawson H.; and Miller, Richard E., to Tri Tool Inc. Portable lathe. 4,483,223, Cl. 82-4.00C.
Nall, Lawson H.; and Miller, Richard E., to Tri Tool Inc. Adjustable mandrel for supporting tubular workpieces. 4,483,522, Cl. 269-48.100.
Namba, Yuzuru; and Aoyagi, Kenichi, to Suzuki Jidosha Kogyo Kabushiki Kaisha. Internal combustion engine. 4,483,292, Cl. 123-308.000.
Nanni, Maurizio; and Sestini, Valdo, to Uno-A-Erre Italia S.p.A. Spring-ring closures for necklace-collars bracelets and others. 4,483,050, Cl. 24-239.000.
Nasiadka, Anthony F.: *See*—
Faulring, Gloria M.; Fitzgibbon, Alan; and Nasiadka, Anthony F., 4,483,710, Cl. 75-129.000.
Nasu, Toshio: *See*—
Tagawa, Kengo; Nasu, Toshio; Yamada, Takao; Yamashita, Kazuo; and Eto, Tetsuo, 4,483,426, Cl. 188-378.000.
Nath, Prem; and Izu, Masatsugu, to Energy Conversion Devices, Inc. Upstream cathode assembly. 4,483,883, Cl. 427-39.000.
Nati, Salvator F., Jr.: *See*—
Bedard, James F.; Eichelberger, Charles W.; and Nati, Salvator F., Jr., 4,484,295, Cl. 364-607.000.
National Distillers and Chemical Corporation: *See*—
Braus, Harry; Barlow, Anthony; and Maringer, Melvin F., 4,483,954, Cl. 524-261.000.
National Equipment RX: *See*—
Cesar, Jean, 4,484,343, Cl. 378-196.000.
National Manufacturing Co.: *See*—
Johnston, James R.; and Meiste, Cordell E., 4,483,044, Cl. 16-70.000.
National Polymers Inc.: *See*—
Anderson, Dennis C., 4,483,098, Cl. 47-47.000.
National Research Development Corp., The: *See*—
Stangroom, James E.; and Harness, Ian, 4,483,788, Cl. 252-578.000.
National Semiconductor Corporation: *See*—
Wieser, James B.; and Reed, Ray A., 4,484,148, Cl. 330-253.000.
Nave, Rafi: *See*—
Palmer, John; Ravenel, Bruce; and Nave, Rafi, 4,484,259, Cl. 364-754.000.
NCR Canada Ltd - NCR Canada LTEE: *See*—
Mazumder, Ali T., 4,484,068, Cl. 235-462.000.
NCR Corporation: *See*—
Cheffer, Harold H., 4,484,084, Cl. 307-64.000.
Sayko, Steven P., 4,484,202, Cl. 346-140.00R.
Wirth, Robert L.; Weeks, David E.; and Reece, John W., 4,484,170, Cl. 336-65.000.
NEC Home Electronics, Ltd.: *See*—
Kaneda, Isao, 4,484,107, Cl. 315-176.000.
Nederlandse Centrale Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek: *See*—
den Otter, Johan L., 4,483,257, Cl. 110-218.000.
Negi, Virendra S.; and Tague, Steven A., to Honeywell Information Systems Inc. Data processor having units carry and tens carry apparatus supporting a decimal multiply operation. 4,484,300, Cl. 364-755.000.
Neidig, Arno: *See*—
Bunk, Klaus; Neidig, Arno; Wahl, Georg; and Keser, Helmut, 4,483,810, Cl. 264-60.000.
Nelson, Steven P.: *See*—
Cornyn, William S., Jr.; Barrett, John S.; Brabston, Donald C., Jr.; Camana, Peter C.; McAferty, James M.; Nelson, Steven P.; and Schy, Stuart T., 4,484,081, Cl. 250-563.000.
Nelson, William T.; and Zuech, Ernest A., to Phillips Petroleum Company. Hydrocarbon synthesis. 4,484,014, Cl. 585-255.000.
Nemoto, Tetsu: *See*—
Togawa, Tatsuo; Nemoto, Tetsu; and Tsubakimoto, Hirohisa, 4,483,200, Cl. 73-861.050.
Neubauer, Jerry L.: *See*—
Brende, Arthur P.; and Neubauer, Jerry L., 4,484,241, Cl. 360-105.000.
Neugroschel, Arnost; Pao, Shing-Chong; Lindholm, Fred A.; Fossum, Jerry G.; and Sah, Chih-Tang, to University of Florida. Oxide charge induced high low junction emitter solar cell. 4,483,063, Cl. 29-572.000.
Neuhouser, Don E., to Power Distribution Products, Inc. Vacuum load break switch. 4,484,046, Cl. 200-144.00B.
Neumann, Gerhard, to Dornier System GmbH. Stepping motor. 4,484,095, Cl. 310-49.00R.
Neumann, Rainer: *See*—
Schwalm, Dieter; and Neumann, Rainer, 4,483,056, Cl. 29-237.000.
Neuzil, Richard W.; and Priegnitz, James W., to UOP Inc. Process for separating glucose from polysaccharides by selective adsorption. 4,483,980, Cl. 536-127.000.
Nevitt, Thomas D.: *See*—
Hensley, Albert L., Jr.; Miller, Jeffrey T.; Nevitt, Thomas D.; and Tait, A. Martin, 4,483,764, Cl. 208-111.000.
New England Machinery, Inc.: *See*—
Ionescu, Alexandru D., 4,483,435, Cl. 198-399.000.
Newman, Wyatt S., to North American Philips Corporation. Vibration control system. 4,483,425, Cl. 188-378.000.
NGK Spark Plug Co., Ltd.: *See*—
Maekawa, Koji; and Kawajiri, Shogo, 4,483,181, Cl. 73-35.000.
Nishio, Shinji; and Kondo, Kazuo, 4,483,678, Cl. 433-201.000.
Ohbuchi, Hiroyuki; and Sobue, Hideo, 4,483,180, Cl. 73-35.000.
Nicholson, Denzel A.: *See*—
Llenado, Ramon A.; and Nicholson, Denzel A., 4,483,779, Cl. 252-135.000.
Nielsen, Anker J., Jr.; and Hoyt, Richard E., to Omco Inc. High security locks and key. 4,483,164, Cl. 70-399.000.
Nieuwendijk, Joris A. M.; and van Gijsel, Wilhelmus D. A. M., to U.S. Philips Corporation. Ribbon-type electro-acoustic transducer with low distortion and improved sensitivity. 4,484,037, Cl. 179-115.5PV.
Nieuwkamp, Wolfgang: *See*—
Junger, Martin; and Nieuwkamp, Wolfgang, 4,483,482, Cl. 239-434.000.
Nihon Cement Co., Ltd.: *See*—
Shinohara, Kunio; and Kimura, Takeshi, 4,483,620, Cl. 366-7.000.
Nihon Coyne Kabushiki Kaisha: *See*—
Igarashi, Tadasu, 4,483,461, Cl. 222-3.000.
Nihon Radiator Co. Ltd.: *See*—
Araya, Katsutoshi; and Tanaami, Hiroshi, 4,483,390, Cl. 165-104.320.
Nijman, Aloysius J.; Schoofs, Franciscus A. C. M.; and van Mil, Job F. P., to U.S. Philips Corporation. Amplifier circuit. 4,484,151, Cl. 330-297.000.
Nikawa, Haruo, to Nikawa, Toshiki. Vehicle towing trailer. 4,483,549, Cl. 280-402.000.
Nikawa, Toshiki: *See*—
Nikawa, Haruo, 4,483,549, Cl. 280-402.000.
Nikolaev, Mikhail M.: *See*—
Zabelin, Igor V.; Ryabukhin, Jury M.; Baibekov, Murat K.; Devyatkin, Vladimir N.; Kitaigorodsky, Efim A.; Kolomiitsev, Arnold V.; Sorokous, Viktor G.; Chalabaev, Ilias A.; Zuev, Nikolai M.; Medeuov, Chaken K.; Chesnokov, Alexandr S.; Usenov, Seisanbai; Tsidrintsev, Grigory V.; Nikolaev, Mikhail M.; Kolyadzin, Alexandr A.; Smorgunov, Boris A.; Chalov, Alexandr V.; Asafiev, Viktor V.; Ladaria, Oleg V.; Vukolov,

Vladimir V.; Sabirov, Khamat K.; and Ivakhno, Fedor A., 4,483,753, Cl. 204-70.000.
Nikolich, Milovan, to Signode Corporation. Portable gas-powered tool with linear motor. 4,483,280, Cl. 123-46.0SC.
Nikolich, Milovan, to Signode Corporation. Combustion gas-powered fastener driving tool. 4,483,474, Cl. 227-8.000.
Nikolsky, Sergei I.: *See*—
Khismatulin, Enver R.; Shel, Marat M.; Novikov, Alexandr N.; Makarov, Viktor M.; Serov, Petr G.; Trotsenko, Vasily D.; Nikolsky, Sergei I.; and Pimshtein, Pavel G., 4,483,166, Cl. 72-137.000.
Ning, Tak H.: *See*—
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Nippon Carbureter Co., Ltd.: *See*—
Ishikawa, Norikazu; and Fujisaki, Masanori, 4,483,303, Cl. 123-527.000.
Nippon Electric Co., Ltd.: *See*—
Iwahashi, Koji, 4,484,358, Cl. 455-213.000.
Shiraki, Hiromitsu; Teranishi, Nobukazu; and Ishihara, Yasuo, 4,484,210, Cl. 357-24.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Hirano, Katsuhiko, 4,483,231, Cl. 84-1.190.
Muto, Kenji, 4,484,237, Cl. 360-25.000.
Nippon Kogaku K. K.: *See*—
Miwa, Kenji; and Hashimoto, Noriyoshi, 4,483,434, Cl. 198-394.000.
Nippon Kokan Kabushiki Kaisha: *See*—
Michishita, Katsumi; Kawano, Mitsugi; Aoshima, Fujio; Kato, Yukio; and Asamoto, Tetsuhiro, 4,484,053, Cl. 219-69.00E.
Tagawa, Kengo; Nasu, Toshio; Yamada, Takao; Yamashita, Kazuo; and Eto, Tetsuo, 4,483,426, Cl. 188-378.000.
Nippon Mining Co., Ltd.: *See*—
Kasai, Shunichi; Ogata, Takashi; Tamanoi, Teruo; and Hosaka, Hiroshi, 4,483,845, Cl. 423-617.000.
Nippon Oil Co., Ltd.: *See*—
Sekido, Yasuo; Inoue, Akira; Mori, Masao; and Kubo, Tatsuki, 4,483,942, Cl. 502-255.000.
Nippon Shokubai Kagaku Kogyo Co., Ltd.: *See*—
Ono, Tetsuji; Ichihara, Shoichi; Ohata, Tomohisa; and Terui, Sadao, 4,483,940, Cl. 502-159.000.
Sonoda, Takezo; Shimoyama, Fumioki; Kaziwara, Teruhisa; and Sato, Takahisa, 4,483,843, Cl. 423-573.00R.
Nippondenso Co., Ltd.: *See*—
Fujioka, Kenji; Morita, Takayuki; Fujiwara, Kenichi; and Ito, Kouji, 4,483,151, Cl. 62-157.000.
Kanayama, Kenji; Sugi, Hidekuni; Ito, Saburo; and Suzuki, Masatoshi, 4,484,097, Cl. 310-268.000.
Yamada, Yasuo; Nagasawa, Shiro; Niwa, Takao; and Gouno, Takeshi, 4,483,301, Cl. 123-489.000.
Nishii, Motoi: *See*—
Kobayashi, Takashi; and Nishii, Motoi, 4,483,933, Cl. 501-138.000.
Nishikawa, Akira, to Mitsubishi Denki Kabushiki Kaisha. Transformer apparatus with superimposed insulated switch and transformer units. 4,484,169, Cl. 336-57.000.
Nishino, Yoshinori: *See*—
Yamamoto, Masahiko; Nishino, Yoshinori; Komura, Akio; and Ebisu, Tomio, 4,483,670, Cl. 425-324.100.
Nishio, Shinji; and Kondo, Kazuo, to NGK Spark Plug Co., Ltd. Dental implant for attachment of artificial tooth. 4,483,678, Cl. 433-201.000.
Nishiwaki, Kiyoshi: *See*—
Takeuchi, Hiroaki; Kawaguchi, Hiroshi; Nishiwaki, Kiyoshi; Toba, Fujio; and Nomura, Yoshihisa, 4,483,145, Cl. 60-578.000.
Nishizawa, Jun-ichi; Ohmi, Tadahiro; and Takeda, Nobuo, to Zaidan Hojin Handotai Kenkyu Shinkokai. Static induction transistor and semiconductor integrated circuit using hetero-junction. 4,484,207, Cl. 357-16.000.
Nissan Motor Company, Limited: *See*—
Araya, Katsutoshi; and Tanaami, Hiroshi, 4,483,390, Cl. 165-104.320.
Fujikawa, Tsuneo; and Takagishi, Haruyoshi, 4,483,476, Cl. 228-4.100.
Hosaka, Akio; and Yamaguchi, Hiroshi, 4,483,300, Cl. 123-489.000.
Ishimaru, Wataru; and Ohtsuka, Kunio, 4,483,215, Cl. 74-759.000.
Kakimoto, Toshihiko, 4,483,521, Cl. 267-8.00R.
Kataoka, Ryuji, 4,483,296, Cl. 123-440.000.
Ohashi, Toshio, 4,483,413, Cl. 181-224.000.
Ohbuchi, Hiroyuki; and Sobue, Hideo, 4,483,180, Cl. 73-35.000.
Ohtsuka, Kunio, 4,483,212, Cl. 74-688.000.
Sawamoto, Kunifumi, 4,483,294, Cl. 123-417.000.
Sekimoto, Hironobu; and Sato, Norio, 4,483,055, Cl. 29-159.200.
Takahashi, Kotei, 4,483,213, Cl. 74-475.000.
Yasuhara, Seishi, 4,483,480, Cl. 239-73.000.
Yazaki, Komei, 4,483,408, Cl. 180-70.100.
Nissan Shatai Co., Ltd.: *See*—
Nogiwa, Masashi; Miyata, Yasunao; Maeda, Tsuyoshi; Kumada, Hajime; and Suzuki, Yoshitaka, 4,483,553, Cl. 280-803.000.
Nisshin Flour Milling Co., Ltd.: *See*—
Tahara, Yoshiyuki; Nagai, Michiko; Kogure, Katsura; Kawase, Shigeo; and Yamaguchi, Teruhito, 4,483,871, Cl. 424-312.000.
Niwa, Takao: *See*—
Yamada, Yasuo; Nagasawa, Shiro; Niwa, Takao; and Gouno, Takeshi, 4,483,301, Cl. 123-489.000.
Noack, Jurgen: *See*—
Beiermann, Norbert; Scheller, Manfred; Kretschmer, Horst; Noack, Jurgen; Blaschke, Klaus-Dieter; Heinz, Lothar; Gohler, Peter; Schweigel, Hans-Joachim; Deicke, Hanshans-Heinrich; Rudolph, Klaus-Peter; and Flachowsky, Johannes, 4,483,199, Cl. 73-861.040.
Noack, William L., to Becton, Dickinson and Company. Liquid removal device. 4,483,925, Cl. 435-293.000.
Noble, Terrance O., to Apothecary Products, Inc. Medication timing and dispensing apparatus. 4,483,626, Cl. 368-10.000.
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Tomoyori, Kageyuki; Uchida, Tatsuo; and Noda, Tadashi, 4,483,107, Cl. 51-281.00R.
Noda, Takeo; and Tsunaki, Ichiro, to Koyu Enterprise, Inc. Omnidirectional motorized wheelchair. 4,483,405, Cl. 180-6.500.
Nogiwa, Masashi; Miyata, Yasunao; Maeda, Tsuyoshi; Kumada, Hajime; and Suzuki, Yoshitaka, to Nissan Shatai Co., Ltd. Passive seat belt for an automobile. 4,483,553, Cl. 280-803.000.
Nolan, James M., Jr.: *See*—
Stiffler, Jack J.; Karp, Richard A.; Nolan, James M., Jr.; Budwey, Michael J.; and Wallace, David A., 4,484,273, Cl. 364-200.000.
Nollet, Michael C.: *See*—
Provanzano, Salvatore R.; Aldrich, Wilbert H.; D'Angelo, Robert A.; Drottar, Emil P.; Finnegan, John J., Jr.; Heom, James; Hill, Lawrence W.; Malcolm, Ronald D.; Nollet, Michael C.; Perlman, Baruch S.; Tressler, Michael B.; Van Schalkwyk, John E.; and Webb, Kincade N., 4,484,303, Cl. 364-900.000.
Nomura, Toshiaki, to Toppan Printing Co., Ltd. Container with a pouring spout. 4,483,464, Cl. 222-83.000.
Nomura, Yoshihisa: *See*—
Takeuchi, Hiroaki; Kawaguchi, Hiroshi; Nishiwaki, Kiyoshi; Toba, Fujio; and Nomura, Yoshihisa, 4,483,145, Cl. 60-578.000.
Nordson Corporation: *See*—
Noss, Jeffrey S., 4,484,294, Cl. 364-513.000.
Olex, Michael B.; and Spongh, Rolf T., 4,484,120, Cl. 318-568.000.
Norlin, Lars G. G. Wobbler. 4,483,091, Cl. 43-42.310.
Norman, Dan M.: *See*—
Norman, Juanita; and Norman, Dan M., 4,483,309, Cl. 123-574.000.
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Newman, Wyatt S., 4,483,425, Cl. 188-378.000.
Stupp, Edward H.; Fellows, Mark W.; and Guarnera, Leonard R., 4,484,108, Cl. 315-219.000.
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Devenyi, Tibor F.; and Turlik, Iwona, 4,483,541, Cl. 277-3.000.
McKay, Glen; and Williams, Robert J., 4,483,134, Cl. 57-18.000.
Rosenbaum, Stanley D., 4,484,032, Cl. 179-18.0FA.
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Washburn, Malcolm E.; and Taylor, Charles W., 4,483,932, Cl. 501-117.000.
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Dietrich, Hermann; Nosges, Hans J.; and Band, Gerhard, 4,483,209, Cl. 74-89.150.
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Noss, Jeffrey S., to Nordson Corporation. Method and apparatus for modification of a prerecorded programmed sequence of motions during execution thereof by a robot. 4,484,294, Cl. 364-513.000.
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Novis, Joseph R. Electrical bridging connector and method of use. 4,483,577, Cl. 339-38.000.
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Dorreich, Kurt A., 4,483,875, Cl. 426-52.000.
Olsen, Hans A. S., 4,483,874, Cl. 426-44.000.
Petersen, Bent R., 4,483,876, Cl. 426-52.000.
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Nowogrodzki, Markus, to RCA Corporation. Channelized frequency memory system employing feedback. 4,484,155, Cl. 331-49.000.
Nukem GmbH: *See*—
Borner, Paul; Dubel, Jurgen; and Hofmann, Jurgen, 4,483,806, Cl. 264-0.500.
Nunn, Timothy A.: *See*—
Kurtz, Anthony D.; Mallon, Joseph R., Jr.; and Nunn, Timothy A., 4,483,196, Cl. 73-730.000.
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Fischer, Bruno; Andretta, Angelo; and Nussbaumer, Manfred, 4,483,433, Cl. 198-339.000.
Nyfeler, Robert: *See*—
Breitenstein, Werner; Fory, Werner; Nyfeler, Robert; and Boger, Manfred, 4,483,707, Cl. 71-94.000.
Nyhus, Orville K.: *See*—
Treise, Jan E.; and Nyhus, Orville K., 4,484,296, Cl. 364-607.000.
Oakwood Industries, Inc.: *See*—
Goldfarb, Ralph, 4,483,900, Cl. 428-262.000.
Obrecht, Werner. Card identification system. 4,484,067, Cl. 235-380.000.
O'Brien, Peter. Solar-powered lighting system. 4,484,104, Cl. 315-86.000.
Oda, Shoichi: *See*—
Takahashi, Hisayoshi; and Oda, Shoichi, 4,483,216, Cl. 74-798.000.

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Atkov, Oleg J.; Popov, Anatoly V.; Mukharlyamov, Nurmukhamed M.; Baranov, Vladimir F.; Belenkov, Jury N.; Frolov, Alexandr N.; Odintsov, Nikolai G.; and Fomina, Galina A., 4,483,344, Cl. 128-661.000.

O'Donnell, John F., to Saflex Systems. Mounting assembly of controlled resilience for basketball goal hoop. 4,483,534, Cl. 273-1.50R.

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Spangrud, Bruce D.; Gunderson, Paul H.; and Whinston, Ann K., 4,483,019, Cl. 2-2.10R.

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Ogata, Takashi: *See—*
Kasai, Shunichi; Ogata, Takashi; Tamanoi, Teruo; and Hosaka, Hiroshi, 4,483,845, Cl. 423-617.000.

Ogata, Yasuhiro; and Maekawa, Masakazu, to Fuji Photo Film Co., Ltd. Heat-sensitive recording papers. 4,484,205, Cl. 346-200.000.

Ogawa, Kyosuke; Shirai, Shigeru; Kanbe, Junichiro; Saitoh, Keishi; and Osato, Yoichi, to Canon Kabushiki Kaisha. Photoconductive member with amorphous silicon-carbon surface layer. 4,483,911, Cl. 430-65.000.

Ogawa, Nitsuo; and Shimizu, Akira, to Toyota Jidosha Kabushiki Kaisha; and Marusun Suruga Kogyosho Co., Ltd. Press machine structure. 4,483,170, Cl. 72-327.000.

Ogawa, Tadashi: *See—*
Yamaguchi, Keiki; Ogawa, Tadashi; and Uno, Hideaki, 4,484,340, Cl. 378-019.000.

Ogden Industries Pty. Ltd.: *See—*
Dunphy, Gerald F.; and Esser, Hans J., 4,483,162, Cl. 70-134.000.

Ogihara, Masahiro: *See—*
Sakaguchi, Susumu; Watanabe, Kazuyoshi; Ogihara, Masahiro; Ryuoh, Toshihiko; Iguchi, Masaaki; and Yoshida, Norifumi, 4,483,734, Cl. 156-605.000.

Ogiro, Kenji; and Gotoh, Shinichi, to Hitachi Maxell, Ltd.; and Hitachi, Ltd. Magnetic recording tape cartridge. 4,484,248, Cl. 360-132.000.

Ogura, Ichiro; and Itoh, Atsuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Ultrasonic flowmeter. 4,483,202, Cl. 73-861.270.

O'Hara, Bernard F.: *See—*
Eddy, Tillman L., 4,483,501, Cl. 248-205.100.

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Sauerwein, William D.; Dibbern, John E., Jr.; O'Hara, Frank J.; and Moores, Robert G., Jr., 4,484,096, Cl. 310-260.000.

O'Hara, Michael L.: *See—*
Eddy, Tillman L., 4,483,501, Cl. 248-205.100.

Ohara, Yuji; and Horikawa, Kazuo, to Fuji Photo Film Co., Ltd. Method of and apparatus for reading out radiation image information. 4,484,073, Cl. 250-327.200.

Ohashi, Hiroyuki; Takami, Toru; Koyama, Noritoshi; Kogure, Yoshio; and Ida, Katsumi, to Eisai Co., Ltd. Aqueous solution containing ubidecarenone. 4,483,873, Cl. 424-331.000.

Ohashi, Toshio, to Nissan Motor Company, Limited. Sound absorber supporting structure for an automotive air intake box. 4,483,413, Cl. 181-224.000.

Ohata, Tomohisa: *See—*
Ono, Tetsuji; Ichihara, Shoichi; Ohata, Tomohisa; and Terui, Sadao, 4,483,940, Cl. 502-159.000.

Ohba, Hiroshi; and Horino, Shigeo, to Tokyo Shibaura Denki Kabushiki Kaisha. Sheet-like material processing apparatus. 4,483,124, Cl. 53-54.000.

Ohba, Yozo; Toyoda, Takashi; Yamanaka, Masaaki; Hashimoto, Fukashi; and Kakizaki, Tetsuji, to Mitsubishi Petrochemical Co., Ltd.; and Oji Yuka Goseishi Co., Ltd. Stretched film. 4,483,965, Cl. 525-322.000.

Ohbuchi, Hiroyuki; and Sobue, Hideo, to Nissan Motor Company, Limited; and NGK Spark Plug Co., Ltd. Method and device for checking an operating condition of an internal combustion engine. 4,483,180, Cl. 73-35.000.

Ohira, Tsuyoshi: *See—*
Nakano, Tomio; Nakano, Masao; Takemae, Yoshihiro; Tsuge, Norihisa; and Ohira, Tsuyoshi, 4,484,312, Cl. 365-233.000.

Ohmi, Tadahiro: *See—*
Nishizawa, Jun-ichi; Ohmi, Tadahiro; and Takeda, Nobuo, 4,484,207, Cl. 357-16.000.

Ohno, John M., to General Electric Company. Wear resistant annular insert and process for making same. 4,483,892, Cl. 428-36.000.

Ohoka, Masaharu; Katoh, Toshio; Mita, Ryuichi; Kawashima, Nobuyuki; Higuchi, Chojiro; Kawashima, Nobuhiro; Yamaguchi, Akihiro; Nagai, Shousuke; and Takano, Takao, to Mitsui Toatsu Chemicals, Incorporated. Preparation process of β-chloroalanine. 4,484,003, Cl. 562-574.000.

Ohtsu, Haruhiro: *See—*
Fujisawa, Mutsuo; Otani, Mitsuru; Ohtsu, Haruhiro; and Kameda, Tsutomu, 4,483,679, Cl. 433-228.000.

Ohtsuka, Kunio, to Nissan Motor Company Limited. Change-speed transmission with selective bypass of hydrokinetic unit. 4,483,212, Cl. 74-688.000.

Ohtsuka, Kunio: *See—*
Ishimaru, Wataru; and Ohtsuka, Kunio, 4,483,215, Cl. 74-759.000.

Oida, Susumu, to Tokyo Shibaura Denki Kabushiki Kaisha. Washing apparatus. 4,483,161, Cl. 68-23.600.

Oinoue, Kenichi: *See—*
Aoki, Masahiro; Oinoue, Kenichi; Ida, Masatoshi; and Hayashi, Asao, 4,483,602, Cl. 354-402.000.

Oji Yuka Goseishi Co., Ltd.: *See—*
Ohba, Yozo; Toyoda, Takashi; Yamanaka, Masaaki; Hashimoto, Fukashi; and Kakizaki, Tetsuji, 4,483,965, Cl. 525-322.000.

Okada, Kouji: *See—*
Matsumoto, Hajime; Okada, Kouji; and Sano, Nobuo, 4,483,077, Cl. 33-125.00A.

Okita, Koichi; and Asako, Sigeru, to Sumitomo Electric Industries, Ltd. Selectively gas-permeable composite membrane and process for production thereof. 4,483,901, Cl. 428-315.500.

Olasz, Sandor; Szalay, Denes; Kovacs, Jozsef; and Kocsis, Oliver, to Csepel Muvek Jarmu Es Konfekcioipari Gepgyara. Sewing machine with selectively controlled conveyor belt feed. 4,483,266, Cl. 112-304.000.

Olex, Michael B.; and Spongh, Rolf T., to Nordson Corporation. Auxiliary function command presequencing for a robot controller. 4,484,120, Cl. 318-568.000.

Olin Corporation: *See—*
Yeager, Howard L.; and Malinsky, J. David, 4,483,748, Cl. 204-1.00T.

Ollis, Martin G. Blind hole anchor nut fastener. 4,483,649, Cl. 411-41.000.

Olmsted, John H.; Lapp, Gary F.; and Tappa, Jerry. Method of removing adsorbent contaminants from electrical apparatus. 4,483,717, Cl. 134-12.000.

Olsen, Hans A. S., to Novo Industri A/S. Preparation of milk substitute. 4,483,874, Cl. 426-44.000.

Olsen, Willi; and Kumar, Sreenivasan S., to Siemens Aktiengesellschaft. Metal encapsulated, pressurized gas insulated high voltage switching apparatus. 4,484,047, Cl. 200-148.00F.

Olson, David E.; Simpson, Peter E.; Melden, Kurt A.; and Dowling, Terence, to Data General Corporation. Communications controller. 4,484,263, Cl. 364-200.000.

Olympus Optical Co., Ltd.: *See—*
Aoki, Masahiro; Oinoue, Kenichi; Ida, Masatoshi; and Hayashi, Asao, 4,483,602, Cl. 354-402.000.
Kimura, Kenji, 4,484,234, Cl. 358-340.000.
Mihara, Shinichi, 4,483,597, Cl. 350-454.000.
Takami, Akiyoshi, 4,483,585, Cl. 350-96.240.
Takekawa, Hiroshi, 4,483,927, Cl. 436-43.000.

Omco Inc.: *See—*
Nielsen, Anker J., Jr.; and Hoyt, Richard E., 4,483,164, Cl. 70-399.000.

OMI International Corporation: *See—*
Harbulak, Edward P.; and Stants nee Halliday, Cynthia A., 4,483,711, Cl. 106-1.220.
Too, Elena H.; and Marx, Daniel R., 4,483,739, Cl. 156-656.000.

Ono Pharmaceutical Co., Ltd.: *See—*
Koide, Tatsushi; Sasatani, Seiei; and Inaba, Kohji, 4,483,846, Cl. 424-19.000.

Ono, Tadahiro, to Toshiba Kikai Kabushiki Kaisha; and Toei Denki Kabushiki Kaisha. Speed control apparatus for polyphase induction motors. 4,484,129, Cl. 318-807.000.

Ono, Takemitsu: *See—*
Iwao, Takayuki; Ono, Takemitsu; and Ishikawa, Yukio, 4,483,249, Cl. 101-93.300.

Ono, Tetsuji; Ichihara, Shoichi; Ohata, Tomohisa; and Terui, Sadao, to Nippon Shokubai Kagaku Kogyo Co., Ltd. Method for manufacture of honeycomb catalyst. 4,483,940, Cl. 502-159.000.

Opie, John E.: *See—*
Wiegand, John R.; and Opie, John E., 4,484,090, Cl. 307-419.000.

Orfi, Magued: *See—*
Underhill, George R.; and Orfi, Magued, 4,483,117, Cl. 52-639.000.

Orito, Fumio, to Mitsubishi Monsanto Chemical Co., Ltd. Method for producing a single crystal of a III_b–V_b compound. 4,483,736, Cl. 156-616.00A.

Orsic, Milo, to AT&T Bell Laboratories. Control information communication arrangement for a time division switching system. 4,484,324, Cl. 370-58.000.

Orsini, Rafael R.: *See—*
Kriete, Richard J.; Orsini, Rafael R.; and Weinglass, Leon, 4,484,105, Cl. 315-133.000.

Osaka Gas Company, Ltd.: *See—*
Murai, Eiji; Suzuki, Tomiji; Sadamori, Hiroki; and Taguchi, Kazuhito, 4,483,673, Cl. 431-328.000.

Osato, Yoichi: *See—*
Ogawa, Kyosuke; Shirai, Shigeru; Kanbe, Junichiro; Saitoh, Keishi; and Osato, Yoichi, 4,483,911, Cl. 430-65.000.

Oshima, Yujiro; Asai, Kiyokazu; and Tokoro, Hiroharu, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Method of and device for detection of knocking for internal combustion engine. 4,483,179, Cl. 73-35.000.

Osinga, Halbe; Vink, Nicolaas G.; and Groothoff, Adriaan J., to U.S. Philips Corporation. Coil support for an electromagnetic deflection unit. 4,484,166, Cl. 335-213.000.

Ostermann, Bernd; and Bitzer, Wolfgang, to Licentia Patent-Verwaltungs-GmbH. System for enciphering and deciphering data. 4,484,025, Cl. 178-22.090.

Ostreng, Arlen J. Aluminum/steel can separator and baler. 4,483,248, Cl. 100-99.000.

Otani, Mitsuru: *See—*
Fujisawa, Mutsuo; Otani, Mitsuru; Ohtsu, Haruhiro; and Kameda, Tsutomu, 4,483,679, Cl. 433-228.000.

Otis Elevator Company: *See—*
Salihi, Jalal T.; and Boiucaner, Leca, 4,483,419, Cl. 187-29.00R.
Salihi, Jalal T.; and Boiucaner, Leca, 4,484,127, Cl. 318-802.000.

Otis Engineering Corporation: *See*—
Fisher, Ernest P., Jr.; and Boyle, William G., 4,483,543, Cl. 277-188.00R.

Otobe, Yutaka; and Kishi, Noriyuki, to Honda Motor Co., Ltd. Method for detecting abnormality in sensor means for detecting a parameter relating to intake air quantity of an internal combustion engine. 4,483,299, Cl. 123-479.000.

Ott, Granville E., to Texas Instruments Incorporated. Graphics video resolution improvement apparatus. 4,484,188, Cl. 340-728.000.

Oudenhoven, Gary L., to Trane Company, The. Bi-directional variable subcooler for heat pumps. 4,483,156, Cl. 62-324.100.

Outboard Marine Corporation: *See*—
Cavil, David T.; and Krueger, William R., 4,483,682, Cl. 440-53.000.

Outokumpu Oy: *See*—
Heimala, Seppo O., 4,483,827, Cl. 423-28.000.

Owens-Corning Fiberglas Corporation: *See*—
Dewey, Keith L.; and Varrasso, Eugene C., 4,483,632, Cl. 374-182.000.

Owens-Illinois, Inc.: *See*—
Bieringer, Robert J.; Kohler, Robert D.; and Ringlien, James A., 4,483,615, Cl. 356-237.000.

Oxley, Peter: *See*—
Basten, Frank; and Oxley, Peter, 4,483,524, Cl. 269-139.000.

Oya, Masayuki: *See*—
Iwao, Jun-ichi; Oya, Masayuki; and Iso, Tadashi, 4,483,861, Cl. 424-263.000.

Ozawa, Tetsuo: *See*—
Imazeki, Shuji; Mukoh, Akio; Sato, Mikio; Imahori, Seiichi; Kaneko, Masaharu; and Ozawa, Tetsuo, 4,483,593, Cl. 350-349.000.

P. A. Rentrop Hubbert & Wagner Fahrzeugausstattunger GmbH & Co. KG: *See*—
Duwelshoft, Helmut, 4,483,504, Cl. 248-429.000.

Pachmayr Gun Works, Inc.: *See*—
Farrar, Frank W.; and Cupp, Carl J., 4,483,060, Cl. 29-278.000.

Palau, Joseph; and Burquier, Jean-Luc, to S.A. Des Etablissements Staubli (France). Fast-fit unions for removably joining pipes. 4,483,510, Cl. 251-149.600.

Palmer, John; Ravenel, Bruce; and Nave, Rafi, to Intel Corporation. Fraction bus for use in a numeric data processor. 4,484,259, Cl. 364-754.000.

Panthofer, Rudolf, to Tetra Werke Dr. rer. nat. Ulrich Baensch GmbH. Plug connection for aquarium pressure medium conduits. 4,483,368, Cl. 137-614.040.

Panzarino, Joseph N.: *See*—
Forker, Ray B., Jr.; and Panzarino, Joseph N., 4,483,700, Cl. 65-30.140.

Pao, Shing-Chong: *See*—
Neugroschel, Arnost; Pao, Shing-Chong; Lindholm, Fred A.; Fossum, Jerry G.; and Sah, Chih-Tang, 4,483,063, Cl. 29-572.000.

Paoletti, Claude: *See*—
Le Pecq, Jean-Bernard; Paoletti, Claude; and Dat-Xuong, Nguyen, 4,483,989, Cl. 546-70.000.

Papp, Uwe: *See*—
Albrecht, Wolf-Wigand; and Papp, Uwe, 4,483,819, Cl. 419-2.000.

Pappas, Nicholas L., to Burroughs Corporation. Flexible mounting support for wafer scale integrated circuits. 4,484,215, Cl. 357-80.000.

Parel, Jacques, to Societe Industrielle de Brevets et d'Etudes S.I.B.E. Process for checking and adjusting carburetors in situ. 4,483,186, Cl. 73-118.000.

Park, John P.: *See*—
Hoffman, Harmon L., Jr.; Weinberg, Steven; and Park, John P., 4,483,023, Cl. 3-1.000.

Parker, Charles E., Jr.; and Singleton, Marshall T., to Hackney, James A., III. Cooking range with fire extinguishing facility. 4,483,314, Cl. 126-221.000.

Parker, Robert P., to RCA Corporation. Automatic kinescope bias control system compensated for kinescope electron gun conduction dissimilarities. 4,484,226, Cl. 358-242.000.

Parker, Robert P., to RCA Corporation. Signal processing network for an automatic kinescope bias control system. 4,484,228, Cl. 358-243.000.

Parker, Robert P., to RCA Corporation. Automatic kinescope bias control system with selectively disabled signal processor. 4,484,229, Cl. 358-243.000.

Parker, Thomas N., Jr. Pumping unit. 4,483,208, Cl. 74-41.000.

Parkes, Ronald A.: *See*—
Lewis, Idris; Allen, Roy H.; Roscoe, John E.; Churchill, John I.; and Parkes, Ronald A., 4,483,559, Cl. 293-126.000.

Parkinson, John R.; Fuller, Richard E.; and Der, Bruce, to A. H. Lundberg Associates, Inc. Method for recovery of reusable chemicals from ClO_2 generator effluent. 4,483,740, Cl. 159-47.300.

Parmentier, Paul, to U.S. Philips Corporation. Method of manufacturing an identification card and an identification manufactured, for example, by this method. 4,483,067, Cl. 29-890.000.

Partex Fabriksaktiebolag: *See*—
Loof, Goran; and Skarin, Lars, 4,484,020, Cl. 174-68.00C.

Pasco, Robert W.: *See*—
Schwarz, James A.; and Pasco, Robert W., 4,483,629, Cl. 374-57.000.

Pasley, Harry M., to Chilucaley Co. Work implement. 4,483,133, Cl. 56-400.060.

Paspek, Stephen C., Jr., to Standard Oil Company, The. Upgrading heavy hydrocarbons with supercritical water and light olefins. 4,483,761, Cl. 208-106.000.

Pastva, John V., to Eastern Company, The. Door closure mechanism having adjustable keepers. 4,483,557, Cl. 292-218.000.

Patchett, Arthur A.; and Ruyle, William V., to Merck & Co., Inc. N-Terminal substituted oligopeptide converting enzyme inhibitors. 4,483,850, Cl. 424-177.000.

Patchett, Arthur A.: *See*—
Kollonitsch, Janos; Marburg, Stephen; and Patchett, Arthur A., 4,483,870, Cl. 424-309.000.

Patel, Jitendra G., to Institute of Gas Technology. Process for the recycling of coal fines from a fluidized bed coal gasification reactor. 4,483,692, Cl. 48-210.000.

Patel, Vithal R.: *See*—
Borgerding, William L.; and Patel, Vithal R., 4,484,301, Cl. 364-760.000.

Patented Devices (PTY) Limited: *See*—
Jenkinson, Christopher G., 4,484,131, Cl. 324-52.000.

Paul, Marius A.; and Sarateanu, Eugen. Synthesis procedure and combustion chamber with variable turbulence. 4,483,289, Cl. 123-263.000.

Paul, Patrick R. D., to Support Systems International, Inc. Fluidized supporting apparatus. 4,483,029, Cl. 5-453.000.

Paullus, Clarence L.: *See*—
Derr, Paul B.; Paullus, Clarence L.; and Shaffer, Howard R., 4,483,579, Cl. 339-90.00R.

Pavick, Fred. Combination foot stool and piano floor pedal actuator. 4,483,232, Cl. 84-232.000.

Pavin, Randall B., to Rockwell International Corporation. Frequency control with a phase-locked-loop. 4,484,154, Cl. 331-23.000.

Payne, Charles C., to Nalco Chemical Company. Oil-dispersible antimony oxide sol dispersed as an oil in water emulsion into a cracking feed. 4,483,765, Cl. 208-120.000.

Payne, Shirley S. Baby safety barrier. 4,483,028, Cl. 5-426.000.

Pearce, Jai K.: *See*—
Schempp, Eberhard G.; Pearce, Jai K.; and Schroeder, David L., 4,483,709, Cl. 75-12.000.

Peg Perego-Pines Deutschland GmbH: *See*—
Dieter, Glaser, 4,483,042, Cl. 16-35.00R.

Pekarich, Steven P.: *See*—
Berenbaum, Alan D.; Jagannathan, Anand; Molinelli, John J.; and Pekarich, Steven P., 4,484,274, Cl. 364-200.000.

Pelczarski, Walter J., to Allied Corporation. Electrical connectors with protective hood. 4,483,580, Cl. 339-103.00M.

Penn's Woods Products, Inc.: *See*—
Piper, Frank R., 4,483,097, Cl. 446-207.000.

Pennsylvania Engineering Corporation: *See*—
Schempp, Eberhard G.; Pearce, Jai K.; and Schroeder, David L., 4,483,709, Cl. 75-12.000.

Penswalt Corporation: *See*—
Gardner, David M.; and McElligott, Paul J., 4,483,757, Cl. 204-158.00R.

Penta, Vincent L.; Boba, Joseph; Conger, Robert P.; Charlton, Ralph W., deceased; and by Charlton, Phylis M., executor, to Congoleum Corporation. Process for preparing high reflectivity decorative surface coverings. 4,483,732, Cl. 156-247.000.

Peppers, James M.; and Shaikh, Farhat A., to Dresser Industries, Inc. Hydraulic power unit for measurement while drilling apparatus. 4,483,394, Cl. 166-113.000.

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Kellar, John D.; and Pereman, Gordon F., 4,483,701, Cl. 65-106.000.
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Roggo, Bernard: *See*—
Chielens, Alain; Benoit, Philippe; and Roggo, Bernard, 4,483,387, Cl. 164-455.000.

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Krajec, Otmar; and Hellmann, Walter, 4,483,814, Cl. 264-230.000.

Rolfe, Jonathan L.: *See*—
Szycher, Michael; Dempsey, Donald J.; and Rolfe, Jonathan L., 4,483,759, Cl. 204-159.240.

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Willis, Jeffrey D., 4,483,138, Cl. 60-39.465.

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Arkharov, Alexei M.; Desyatov, Alexandr T.; Bondarenko, Vitaly L.; Pronko, Vladimir G.; Krakovsky, Boris D.; Korsakov-Bogatkov, Sergei M.; Jushin, Viktor P.; Kopova, Alexandra M.; Gorodnov, Petr V.; Borisov, Julian Y.; Ermilov, Vadim V.; and Romanteev, Jury P., 4,483,158, Cl. 62-402.000.

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Frey, Werner U.; Rometsch, Johannes; and Diem, Hans, 4,483,634, Cl. 400-489.000.

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Hertz, Claude M., 4,484,125, Cl. 318-768.000.

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Lewis, Idris; Allen, Roy H.; Roscoe, John E.; Churchill, John I.; and Parkes, Ronald A., 4,483,559, Cl. 293-126.000.

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Bagnall, Jeffrey L.; and Roscoe, Tom, 4,484,290, Cl. 364-483.000.

Rosenbaum, Stanley D., to Northern Telecom Limited. Active impedance transformer assisted line feed circuit. 4,484,032, Cl. 179-18.0FA.

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Band, Gerhard; Nosges, Hans-Jurgen; and Ross, Gunther, 4,483,079, Cl. 33-174.00L.

Ross, Herbert G., Jr.; and Hrncir, Robert E., to Rochester Gauges, Inc. Stop fill valve. 4,483,367, Cl. 137-416.000.

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Rossell, Jame, 4,484,056, Cl. 219-86.510.

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White, Gerald A.; Roszkowski, Theodore R.; and Fleming, Harold W., 4,483,693, Cl. 48-213.000.

Rotor Tool Company, The: *See*—
Curtiss, George R., 4,483,236, Cl. 91-1.000.

Rotron, Incorporated: *See*—
Ebbs, John W., 4,484,114, Cl. 318-138.000.

Roulston, James B.: *See*—
Webster, Peter-John; and Roulston, James B., 4,484,071, Cl. 250-237.00G.

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Christidis, Yani; Fournex, Robert; and Tournemine, Colette, 4,483,868, Cl. 424-282.000.
Heymes, Rene , 4,483,981, Cl. 544-28.000.

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Rub, Bernardo; and Field, Norman A., to Digital Equipment Corp. Phase detector circuit. 4,484,142, Cl. 328-155.000.

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Rudzyanskas, Juozas P.; and Rudzyanskaite, Galina J., 4,483,074, Cl. 33-1.00M.

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Gartner, Roderich; Cornils, Boy; Springer, Helmut; and Lappe, Peter, 4,483,802, Cl. 260-505.00C.

Ruijgrok, Rudolphus P. T.; and Tempelman, Gerrit, to U.S. Philips Corporation. Pulsed in etching of aluminum foil for use in electrolytic capacitors. 4,484,252, Cl. 361-433.000.

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Ruoff, Eugen: *See*—
Bindel, Rudolf; and Ruoff, Eugen, 4,483,539, Cl. 277-1.000.

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Hahn, Granville J.; Rutledge, Raleigh N.; and Murley, Jackie D., 4,483,669, Cl. 425-131.100.
Hahn, Granville J.; Rutledge, Raleigh N.; and Murley, Jackie D., 4,483,812, Cl. 264-171.000.

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Ruyle, William V.: *See*—
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Ryabukhin, Jury M.: *See*—
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Ryuoh, Toshihiko: *See*—
Sakaguchi, Susumu; Watanabe, Kazuyoshi; Ogihara, Masahiro; Ryuoh, Toshihiko; Iguchi, Masaaki; and Yoshida, Norifumi, 4,483,734, Cl. 156-605.000.

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Bartlett, Robert W.; and Jorgensen, Paul J., 4,483,720, Cl. 148-6.300.
Manser, Gerald E., 4,483,978, Cl. 528-408.000.

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Minning, Rudolf; Dierkes, Heribert; Korner, Jorg-Peter; and Saamer, Peter, 4,483,458, Cl. 220-320.000.

Saeri, Walfred S., to Merck & Co., Inc. 8-[2-Imidazolylmethyloxy(thio, or amino)]-imidazo[1,2-a]pyrazines and derivatives for treating hypertension. 4,483,858, Cl. 424-250.000.

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Zabelin, Igor V.; Ryabukhin, Jury M.; Baibekov, Murat K.; Devyatkin, Vladimir N.; Kitaigorodsky, Efim A.; Kolomiitsev, Arnold V.; Sorokous, Viktor G.; Chalabaev, Ilias A.; Zuev, Nikolai M.; Medeuov, Chaken K.; Chesnokov, Alexandr S.; Usenov, Seisanbai; Tsidrintsev, Grigory V.; Nikolaev, Mikhail M.; Kolyadzin, Alexandr A.; Smorgunov, Boris A.; Chalov, Alexandr V.; Asafiev, Viktor V.; Ladaria, Oleg V.; Vukolov, Vladimir V.; Sabirov, Khamat K.; and Ivakhno, Fedor A., 4,483,753, Cl. 204-70.000.

Sabot, Jean-Louis, to Rhone-Poulenc Chimie de Base. Preparation of sulfonated triarylphosphines. 4,483,801, Cl. 260-505.00C.

Sadamori, Hiroki: *See*—
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Sadowski, John S., to Lord Corporation. Aqueous adhesive systems. 4,483,962, Cl. 524-552.000.
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O'Donnell, John F., 4,483,534, Cl. 273-1.50R.
Sah, Chih-Tang: *See*—
Neugroschel, Armost; Pao, Shing-Chong; Lindholm, Fred A.; Fossum, Jerry G.; and Sah, Chih-Tang, 4,483,063, Cl. 29-572.000.
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Saitoh, Keishi: *See*—
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Sakaguchi, Susumu; Watanabe, Kazuyoshi; Ogihara, Masahiro; Ryuoh, Toshihiko; Iguchi, Masaaki; and Yoshida, Norifumi, to Shin-Etsu Chemical Co., Ltd. Method for the preparation of single crystals of gadolinium gallium garnet. 4,483,734, Cl. 156-605.000.
Sakai, Hiroyuki: *See*—
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Sakai, Nobuo; Aotani, Yoshimasa; Yabuki, Yoshiharu; and Furutachi, Nobuo, to Fuji Photo Film Co., Ltd. Color photographic light-sensitive material. 4,483,918, Cl. 430-372.000.
Sakakibara, Toshimitsu: *See*—
Yamada, Shigeo; Takawashi, Tamio; and Sakakibara, Toshimitsu, 4,484,051, Cl. 219-69.00C.
Sakamoto, Norimasa: *See*—
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Sakaoka, Hiromu, to Honda Giken Kogyo Kabushiki Kaisha. Intake system of an internal combustion engine. 4,483,282, Cl. 123-52.0MB.
Sakka, Hiroshi: *See*—
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Salie, Edward R., to AMP Incorporated. Membrane switch having improved switch tail. 4,484,039, Cl. 200-5.00A.
Salihi, Jalal T.; and Boiucaner, Leca, to Otis Elevator Company. Elevator motoring and regeserating dynamic gain compensation. 4,483,419, Cl. 187-29.00R.
Salihi, Jalal T.; and Boiucaner, Leca, to Otis Elevator Company. Inverter power transistor protection. 4,484,127, Cl. 318-802.000.
Salm, Dietmar F. E., to Broken Hill Proprietary Company Limited, The. Manufacture of tinplate and tinplate containers. 4,483,907, Cl. 428-629.000.
Sanchez, Gil. Container and removable lid therefor. 4,483,450, Cl. 215-254.000.
Sandberg, Karen R.: *See*—
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Sanders, David E.: *See*—
Mosley, William H.; and Sanders, David E., 4,484,335, Cl. 375-1.000.
Sanders, Frederick W., to Mead Corporation. Imaging system with microcapsules containing photohardenable or photosoftenable composition. 4,483,912, Cl. 430-138.000.
Sanderson, John R.; Marquis, Edward T.; and Lin, Jiang-Jen, to Texaco Inc. Simultaneous epoxide and carboxylic acid manufacture by co-oxidation in the presence of a copper-boron-silver catalyst. 4,483,998, Cl. 549-533.000.
Sandoz Ltd.: *See*—
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Sankyo Company Limited: *See*—
Nakao, Hideo; Fujimoto, Koichi; Ishihara, Sadao; Sugawara, Shinichi; and Igarashi, Isamu, 4,483,855, Cl. 424-246.000.
Sano, Nobuo: *See*—
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Santen Pharmaceutical Co., Ltd.: *See*—
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Sanyo Electric Co., Ltd.: *See*—
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Sanyo Machine Works, Limited: *See*—
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Sarateanu, Eugen: *See*—
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Saravis, Calvin A.: *See*—
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Saruwatari, Kohichi: *See*—
Murayama, Seizo; Isawa, Kazuo; Maejima, Masatsugu; Usuki, Takayoshi; and Saruwatari, Kohichi, 4,483,751, Cl. 204-37.100.
Sasajima, Yoichi: *See*—
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Sasatani, Seiei: *See*—
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Sasol One (Proprietary) Limited: *See*—
Rolke, Dietrich; Hitzel, Hans; and Brink, Andries, 4,483,772, Cl. 210-601.000.
Satake Engineering Co., Ltd.: *See*—
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Sato, Akihiro; Suzuki, Takeshi; Kikuta, Kazutsune; Chiba, Hiromasa; Uwai, Toshihiro; Matsuda, Kenji; and Hanari, Tohru, to Chisso Corporation. Process for producing terpolymers of propylene, ethylene and another α-olefin. 4,483,971, Cl. 526-142.000.
Sato, Fumihiko: *See*—
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Sato, Hirotaka: *See*—
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Sato, Kazuhiro; Murata, Nobuo; Takahashi, Kenji; and Nagahara, Shusaku, to Hitachi, Ltd.; and Hitachi Denshi Kabushiki Kaisha. Pulse generating circuit for a television camera using solid state image sensor. 4,484,224, Cl. 358-213.000.
Sato, Kiroku: *See*—
Ando, Masao; Tanaka, Kenkichi; and Sato, Kiroku, 4,483,809, Cl. 264-53.000.
Sato, Kozo: *See*—
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Sato, Mikio: *See*—
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Sato, Norio: *See*—
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Sato, Takahisa: *See*—
Sonoda, Takezo; Shimoyama, Fumioki; Kaziwara, Teruhisa; and Sato, Takahisa, 4,483,843, Cl. 423-573.00R.
Sato, Takeo, to Tokyo Shibaura Denki Kabushiki Kaisha. Cathode-ray tube for projector having heat conduction and radiating means. 4,484,100, Cl. 313-44.000.
Sato, Toshimi: *See*—
Baba, Kazuo; Wakatsuki, Kizuku; Sato, Toshimi; and Hikasa, Tadashi, 4,483,939, Cl. 502-127.000.
Sato, Yo; and Kashiwaba, Tadao, to Kabushiki Kaisha Sato. Rolled label strip cassette. 4,483,733, Cl. 156-541.000.
Satoh, Isao: *See*—
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Satoh, Shiroh, to Konishiroku Photo Industry Co., Ltd. Variable magnification copying apparatus. 4,483,608, Cl. 355-8.000.
Sauerwein, William D.; Dibbern, John E., Jr.; O'Hara, Frank J.; and Moores, Robert G., Jr., to Black & Decker Inc. Field subassembly for an electric motor. 4,484,096, Cl. 310-260.000.
Saunders, Alex M., to SmithKline Beckman Corporation. Preservation of relationship of particles and supporting liquid of a monolayer during drying. 4,483,882, Cl. 427-2.000.
Saunders, Frances C.: *See*—
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Saurenman, Donald G., to Consan Pacific Incorporated. Control of static neutralization employing cables and wires. 4,484,249, Cl. 361-216.000.
Savage, David W.: *See*—
Stogryn, Eugene L.; Savage, David W.; and Sartori, Guido, 4,483,833, Cl. 423-228.000.
Savio & C. S.p.a.: *See*—
Cucconi, Enzo; and Cucconi, Renato, 4,483,159, Cl. 66-132.00T.
Sawamoto, Kunifumi, to Nissan Motor Company, Limited. Engine control system. 4,483,294, Cl. 123-417.000.
Sayklay, Alex R. Artist's painting aid. 4,483,036, Cl. 15-160.000.
Sayko, Steven P., to NCR Corporation. Coiled conduits within ink jet reservoir. 4,484,202, Cl. 346-140.00R.
Schaefer, Hermann; and Hoffman, Ernest G., to Harvey Hubbell Incorporated. Electrical outlet seal. 4,484,021, Cl. 174-53.000.
Schafer, Peter: *See*—
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Scheller, Manfred: *See*—
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Schempp, Eberhard G.; Pearce, Jai K.; and Schroeder, David L., to Pennsylvania Engineering Corporation. Steel production method. 4,483,709, Cl. 75-12.000.

Scherf, Wilhelm: *See—*
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Scheuerecker, Werner, to Voest-Alpine Aktiengesellschaft. Method to be carried out in a horizontal continuous casting plant for introducing a starter bar head of a starter bar into the open ends mould of the horizontal continuous casting plant. 4,483,386, Cl. 164-483.000.

Schiff Photo Mechanics: *See—*
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Schirmer, Robert M., to Phillips Petroleum Company. Recovery of heat values from vitiated gaseous mixtures. 4,483,832, Cl. 423-210.000.

Schlafly, Hubert J. Television line multiplexed data communication system. 4,484,328, Cl. 370-85.000.

Schlicker, Heinrich A., to AB Volvo. Vehicle gearbox with continuously variable gear ratio. 4,483,687, Cl. 474-28.000.

Schlosser, Detlef: *See—*
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Schlosser, Siegfried: *See—*
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Schlosser, Theodoor A. J., to U.S. Philips Corporation. Comparison circuit for determining the statistical equality of two analog signals. 4,484,291, Cl. 364-484.000.

Schlueter, Francis E., to Deere & Company. Tractor-mounted harvester. 4,483,131, Cl. 56-15.600.

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Schmid, Horst: *See—*
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Schmidt, Dietrich F., to Capitol Products Corporation. Window assembly. 4,483,099, Cl. 49-63.000.

Schmidt, Martin; Kohler, Walter; and Abelitis, Andris, to Klockner-Humboldt-Deutz AG. Method and apparatus for calcining lime. 4,483,831, Cl. 423-175.000.

Schmidt, Robert J., to UOP Inc. Process for coproduction of isopropanol and tertiary butyl alcohol. 4,484,013, Cl. 568-899.000.

Schnurbusch, Horst: *See—*
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Schoenfelder, James L. Insulated building component. 4,483,115, Cl. 52-309.120.

Schoenwald, Ronald D.: *See—*
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Barfknecht, Charles F.; and Schoenwald, Ronald D., 4,483,872, Cl. 424-321.000.

Schofield, Roy A.; and Wilson, Edward, to Shorrock Developments Limited. Intruder detection apparatus for functioning free of disturbance while in close proximity to high-power pulse-moldulated radars. 4,484,182, Cl. 340-552.000.

Scholten, Frank L.: *See—*
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Schonhorn, Harold; and Sharpe, Louis H., to AT&T Bell Laboratories. Liquids with reduced spreading tendency. 4,483,898, Cl. 428-356.000.

Schonmeier, Herbert, to Jagenberg AG. Core holder for a winder. 4,483,493, Cl. 242-66.000.

Schoofs, Franciscus A. C. M.: *See—*
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Schoolman, Arnold. Locking flexible shaft device with live distal end attachment. 4,483,562, Cl. 294-19.00R.

Schreck, Ronald P.: *See—*
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Schreiber, Loren B.: *See—*
Light, Kenneth K.; Schreiber, William L.; McGhie, Joseph A.; Schreck, Ronald P.; Yoshida, Takao; Schreiber, Loren B.; and Muralidhara, Ranya, 4,483,995, Cl. 549-451.000.

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Schroeder, David L.: *See—*
Schempp, Eberhard G.; Pearce, Jai K.; and Schroeder, David L., 4,483,709, Cl. 75-12.000.

Schubert, Ernst W.; and Dorfler, Josef, to Intermedicat GmbH. Hose pump for medical uses. 4,483,666, Cl. 418-45.000.

Schukei, Glen E.; and Tade, Lee A., III, to Combustion Engineering, Inc. Hinged steam generator nozzle plug. 4,483,457, Cl. 220-232.000.

Schulenburg, Edward J., Jr.: *See—*
Betz, Howard T.; and Schulenburg, Edward J., Jr., 4,484,079, Cl. 250-548.000.

Schulte, Friedrich: *See—*
Cremer, Josef; Holz, Josef; Haas, Hans; and Schulte, Friedrich, 4,483,837, Cl. 423-309.000.

Schulte Strathaus, Franz E.: *See—*
Kruger, Manfred; and Schulte Strathaus, Franz E., 4,483,575, Cl. 339-14.00P.

Schulz, David W., to Rockwell International Corporation. Method for fabricating superplastically formed/diffusion bonded aluminum or aluminum alloy structures. 4,483,478, Cl. 228-157.000.

Schupphaus, Herbert; and Pulger, Heinz, to Gebr. Eickhoff Maschinefabrik und Eisengiesserei m.b.H. Advancing apparatus for a multi-unit mining machine. 4,483,568, Cl. 299-53.000.

Schustek, Siegfred: *See—*
Ahner, Peter; Harer, Helmut; and Schustek, Siegfred, 4,484,049, Cl. 219-10.510.

Schutz, Rudolf, to Robert Bosch GmbH. Valve. 4,483,298, Cl. 123-452.000.

Schutz, Winfried. Device for orthodontic tooth regulation. 4,483,674, Cl. 433-22.000.

Schwalm, Dieter; and Neumann, Rainer, to Moebius, Kurt O.; and Hackforth GmbH & Co. KG, a part interest. Tool for closing pipe couplings. 4,483,056, Cl. 29-237.000.

Schwankhart, Gerhard: *See—*
Sticht, Walter; and Schwankhart, Gerhard, 4,483,219, Cl. 81-57.140.

Schwarcz, Robert: *See—*
Collins, James F.; Curry, Kenneth; and Schwarcz, Robert, 4,483,853, Cl. 424-211.000.

Schwarting, Karl H., to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Apparatus for positioning supply connections into association with a mining extractor. 4,483,567, Cl. 299-43.000.

Schwartz, Frederic W., to Cable Electric Products, Inc. Travel burglar/smoke alarm. 4,484,181, Cl. 340-521.000.

Schwarz, James A.; and Pasco, Robert W., to Syracuse University. Dynamic testing of electrical conductors. 4,483,629, Cl. 374-57.000.

Schwarz, Manfred: *See—*
Eheim, Franz; Hofer, Gerald; Koster, Claus; Konrath, Karl; and Schwarz, Manfred, 4,483,297, Cl. 123-449.000.

Schweigel, Hans-Joachim: *See—*
Beiermann, Norbert; Scheller, Manfred; Kretschmer, Horst; Noack, Jurgen; Blaschke, Klaus-Dieter; Heinz, Lothar; Gohler, Peter; Schweigel, Hans-Joachim; Deicke, Hanshans-Heinrich; Rudolph, Klaus-Peter; and Flachowsky, Johannes, 4,483,199, Cl. 73-861.040.

Schy, Stuart T.: *See—*
Cornyn, William S., Jr.; Barrett, John S.; Brabston, Donald C., Jr.; Camana, Peter C.; McAferty, James M.; Nelson, Steven P.; and Schy, Stuart T., 4,484,081, Cl. 250-563.000.

SCM Corporation: *See—*
Bridle, Peter F., 4,483,742, Cl. 162-5.000.
Cardenas, Carlos G.; Ho, Tse-Lok; and Liu, Shing-Hou, 4,484,007, Cl. 568-628.000.

Scott, James W.: *See—*
Knappe, Herman E.; and Scott, James W., 4,483,360, Cl. 137-240.000.

Scott, Randy J.: *See—*
Caldwell, Robert H.; and Scott, Randy J., 4,483,084, Cl. 37-86.000.

Scriver, Richard M., to Goodyear Tire & Rubber Company, The. Pneumatic tire with belt reinforcement. 4,483,381, Cl. 152-155.000.

Sculthorpe, Donald L., to Stauffer Chemical Company. Treatment of contaminated phosphoric acid to recover usable acid therefrom. 4,483,838, Cl. 423-321.00R.

Seal, Henry, to Mobil Oil Corporation. Flushing apparatus for a drilling mud testing system. 4,483,189, Cl. 73-155.000.

Seam Team: *See—*
Gray, James B.; Jorgenson, Peter L.; and Joyce, Robert A., 4,483,896, Cl. 428-200.000.

Sears, I. Weir, Jr.: *See—*
Hostetler, John E.; Hulsebusch, William H.; and Sears, I. Weir, Jr., 4,483,467, Cl. 223-74.000.

Secalt S.A.: *See—*
Cavalieri, Michel, 4,483,517, Cl. 254-254.000.

Seco Industries, Inc.: *See—*
Moss, Theron C.; and Tomm, Erwin, 4,483,035, Cl. 15-153.000.

Second Century Farms, Inc.: *See—*
Sparks, Roger C., 4,483,532, Cl. 272-96.000.

Seemann, William H., III. Wooden boat hull constructions, and method for such constructions. 4,483,267, Cl. 114-357.000.

Seibert, Willard J.: *See—*
Rider, Gerald R.; and Seibert, Willard J., 4,483,149, Cl. 60-751.000.

Seidel, Klaus G.: *See—*
Kourimsky, Friedrich J. A.; and Seidel, Klaus G., 4,483,581, Cl. 339-176.0MP.

Seim, Terry D.: *See—*
Day, James L.; and Seim, Terry D., 4,484,122, Cl. 318-663.000.

Seisakusho Kabushiki Kaisha Toyoda Jidoshokki: *See—*
Kurushima, Tadanori; and Kamiya, Kazuo, 4,483,135, Cl. 57-301.000.

Seitz, William R.; Farrah, Harry R.; Brumm, Gerald A.; Evans, Lansing B.; and Walter, Chris J., to Bendix Corporation, The. Moving map display. 4,484,192, Cl. 340-995.000.

Sekida, Minoru; Yamaki, Toshio; Fujii, Akira; Matsushita, Shuzo; and Kataoka, Akira, to Minolta Camera Kabushiki Kaisha. Camera with photographic data setting device. 4,483,601, Cl. 354-288.000.

Sekido, Yasuo; Inoue, Akira; Mori, Masao; and Kubo, Tatsuki, to Nippon Oil Co., Ltd. Process of preparing hydrogenation catalysts. 4,483,942, Cl. 502-255.000.

Sekimoto, Hironobu; and Sato, Norio, to Nissan Motor Company, Limited. Secondary working apparatus. 4,483,055, Cl. 29-159.200.

Selflevel Covers (Jersey) Limited: *See—*
Ferns, Derek, 4,483,110, Cl. 52-20.000.

Sellers, Gregory J.: *See*—
Gregor, John A.; and Sellers, Gregory J., 4,484,184, Cl. 340-572.000.

Semen, John; Jones, Jesse D.; and Hornbaker, Edwin D., to Ethyl Corporation. Polyethylene terephthalate blends. 4,483,949, Cl. 523-514.000.

Semmler, Hans-Joachim, to Hoechst Aktiengesellschaft. Process for the manufacture of a cementitious resin solution. 4,483,968, Cl. 525-401.000.

Senensieb, Gideon A.: *See*—
Lambourn, Edward H.; and Senensieb, Gideon A., 4,484,299, Cl. 364-724.000.

Sentrol Systems Ltd.: *See*—
Riggin, Michael T., 4,484,133, Cl. 324-58.50A.

Sepson AB: *See*—
Geschwind, Rune L., 4,483,518, Cl. 254-274.000.

Sequoia Systems, Inc.: *See*—
Stiffler, Jack J.; Karp, Richard A.; Nolan, James M., Jr.; Budwey, Michael J.; and Wallace, David A., 4,484,273, Cl. 364-200.000.

Seragnoli, Enzo, to G. D. Societa per Azioni. Turnaround device for rod-like articles, in particular cigarettes. 4,483,351, Cl. 131-282.000.

Serov, Petr G.: *See*—
Khismatulin, Enver R.; Shel, Marat M.; Novikov, Alexandr N.; Makarov, Viktor M.; Serov, Petr G.; Trotsenko, Vasily D.; Nikolsky, Sergei I.; and Pimshtein, Pavel G., 4,483,166, Cl. 72-137.000.

Servitova , Linda: *See*—
Barth, Tomislav; Jost, Karel; Lebl, Michal; Machova , Alena; Servitova , Linda; and Slaninova, Jirina, 4,483,794, Cl. 260-112.50R.

Sestini, Valdo: *See*—
Nanni, Maurizio; and Sestini, Valdo, 4,483,050, Cl. 24-239.000.

Seybold, Guenther: *See*—
Eilingsfeld, Heinz; Hansen, Guenter; Seybold, Guenther; and Zeidler, Georg, 4,483,795, Cl. 534-756.000.

Seymour, Raymond K.; and Ashline, William J., to General Electric Company. Molded case circuit breaker having improved arc resistant properties. 4,484,045, Cl. 200-144.00R.

Shaffer, Howard R.: *See*—
Derr, Paul B.; Paullus, Clarence L.; and Shaffer, Howard R., 4,483,579, Cl. 339-90.00R.

Shaffer, Roy E., to United States of America, Army. Method of screening infra-red radiation. 4,484,195, Cl. 343-18.00B.

Shaikh, Farhat A.: *See*—
Peppers, James M.; and Shaikh, Farhat A., 4,483,394, Cl. 166-113.000.

Shamos, Desmond E. Device and method for the reduction of lumbar lordosis. 4,483,329, Cl. 128-69.000.

Shaparew, Vladimir. Ventilating inner cover for beehives. 4,483,031, Cl. 6-1.000.

Shapiro, Eugene: *See*—
Hong, Se J.; Nair, Ravindra K.; and Shapiro, Eugene, 4,484,292, Cl. 364-491.000.

Sharpe, Louis H.: *See*—
Schonhorn, Harold; and Sharpe, Louis H., 4,483,898, Cl. 428-356.000.

Sharpe, Timothy E. Solar heat collector system. 4,483,321, Cl. 126-426.000.

Shaw, Lewis A.: *See*—
Clutter, Melvin E.; and Shaw, Lewis A., 4,483,058, Cl. 29-254.000.

Sheem, Sang K., to United States of America, Navy. Wavelength multiplexer-demultiplexer. 4,483,582, Cl. 350-96.150.

Shel, Marat M.: *See*—
Khismatulin, Enver R.; Shel, Marat M.; Novikov, Alexandr N.; Makarov, Viktor M.; Serov, Petr G.; Trotsenko, Vasily D.; Nikolsky, Sergei I.; and Pimshtein, Pavel G., 4,483,166, Cl. 72-137.000.

Shell Oil Company: *See*—
Harris, Martin; and Wood, Derek A., 4,483,856, Cl. 424-246.000.

Shelton, Kenneth B.; Herkert, Klaus H.; and Twedt, Lynn O., to Erect-A-Tube, Inc. Self-cleaning, self-centering door track having an integral mount. 4,483,045, Cl. 16-95.00R.

Shen, Jian-Kuo: *See*—
Miu, Ming T.; Bradley, John J.; and Shen, Jian-Kuo, 4,484,271, Cl. 364-200.000.

Sher, Nathan. Skin testing device. 4,483,348, Cl. 128-743.000.

Sherman, Alden O. Forming apparatus. 4,483,168, Cl. 72-220.000.

Sherman, Robert M., to Aquaria, Inc. Filter cartridge. 4,483,769, Cl. 210-282.000.

Shibano, Yoshimitsu: *See*—
Umetsu, Hiroshi; Sato, Hirotaka; Yamashita, Katsuji; and Shibano, Yoshimitsu, 4,483,823, Cl. 422-63.000.

Shikoku Kaken Kogyo Kabushiki Kaisha: *See*—
Motoki, Hideo, 4,483,713, Cl. 106-75.000.

Shim, Joosup, to Mobil Oil Corporation. Stability improvers for water-in-oil emulsion. 4,483,777, Cl. 252-49.500.

Shimamura, Koichi, to Sonix Ltd. Method and apparatus for plating minute parts. 4,483,749, Cl. 204-15.000.

Shimizu, Akira: *See*—
Ogawa, Nitsuo; and Shimizu, Akira, 4,483,170, Cl. 72-327.000.

Shimizu, Atsuyoshi: *See*—
Suzuki, Takeshi; Shimizu, Hiroshi; Komori, Nobutoshi; Umeno, Takehiro; and Shimizu, Atsuyoshi, 4,483,966, Cl. 525-323.000.

Shimizu, Hiroshi: *See*—
Suzuki, Takeshi; Shimizu, Hiroshi; Komori, Nobutoshi; Umeno, Takehiro; and Shimizu, Atsuyoshi, 4,483,966, Cl. 525-323.000.

Shimoyama, Fumioki: *See*—
Sonoda, Takezo; Shimoyama, Fumioki; Kaziwara, Teruhisa; and Sato, Takahisa, 4,483,843, Cl. 423-573.00R.

Shin-Etsu Chemical Co., Ltd.: *See*—
Sakaguchi, Susumu; Watanabe, Kazuyoshi; Ogihara, Masahiro; Ryuoh, Toshihiko; Iguchi, Masaaki; and Yoshida, Norifumi, 4,483,734, Cl. 156-605.000.

Shindelar, Aloysius C., to Deere & Company. Adjustable spanner wrench. 4,483,220, Cl. 81-100.000.

Shinkai, Mikio: *See*—
Aruga, Shiro; Nakano, Kazuaki; Mito, Kyuichi; Mukai, Kei; and Shinkai, Mikio, 4,483,747, Cl. 203-92.000.

Shinko Engineering Research Corp.: *See*—
Kumagai, Takashi, 4,484,080, Cl. 250-560.000.

Shinohara, Kunio; and Kimura, Takeshi, to Kajima Road Co. Ltd.; and Nihon Cement Co., Ltd. Regenerative heating and melting device for recovered asphalt concrete rubble. 4,483,620, Cl. 366-7.000.

Shionogi & Co., Ltd.: *See*—
Ogata, Masaru; Tawara, Katsuya; Watanabe, Yoshihachi; Matsumoto, Hiroshi; and Takahashi, Toshio, 4,483,866, Cl. 424-273.00R.

Shirai, Shigeru: *See*—
Ogawa, Kyosuke; Shirai, Shigeru; Kanbe, Junichiro; Saitoh, Keishi; and Osato, Yoichi, 4,483,911, Cl. 430-65.000.

Shiraki, Hiromitsu; Teranishi, Nobukazu; and Ishihara, Yasuo, to Nippon Electric Co., Ltd. Solid-state imaging device having a reduced image lag. 4,484,210, Cl. 357-24.000.

Shiroki, Hiroyuki, to Asahi Kasei Kogyo Kabushiki Kaisha. Electrolysis of sodium chloride with the use of ion exchange membranes. 4,483,754, Cl. 204-98.000.

Shizuno, Masaaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Figure recognizing system. 4,484,348, Cl. 382-48.000.

Shorrock Developments Limited: *See*—
Schofield, Roy A.; and Wilson, Edward, 4,484,182, Cl. 340-552.000.

Showa Musen Kogyo Kabushiki Kaisha: *See*—
Masahiro, Tazawa, 4,483,578, Cl. 339-75.0MP.

Shuji, Hoshino: *See*—
Katsuta, Susumu; Adachi, Susumu; and Shuji, Hoshino, 4,483,487, Cl. 241-121.000.

Siegfried Aktiengesellschaft: *See*—
Thiele, Kurt; Ahmed, Quazi; Adrian, Rudolf; and Jahn, Ulrich, 4,483,999, Cl. 560-57.000.

Siemens Aktiengesellschaft: *See*—
Beyer, Johann; and Derndinger, Walter, 4,483,343, Cl. 128-660.000.
Olsen, Willi; and Kumar, Sreenivasan S., 4,484,047, Cl. 200-148.00F.
Pfeifer, Rolf, 4,483,342, Cl. 128-653.000.
Pink, Hans, 4,483,824, Cl. 422-92.000.
Riha, Gerd, 4,484,160, Cl. 333-195.000.

Siemens-Allis, Inc.: *See*—
McClellan, David P.; and Kussy, Frank W., 4,484,164, Cl. 335-16.000.

Siemens Medical Laboratories: *See*—
Tayag, Rolando; and Menor, George M., 4,484,078, Cl. 250-505.100.

Siemiller, Gerald L. Solarmat. 4,483,325, Cl. 126-444.000.

Siemion, Chester C., to Ethyl Corporation. Chromatographic column. 4,483,374, Cl. 141-9.000.

Sigma-Tau Industrie Farmaceutiche Riunite S.p.A.: *See*—
Tinti, Maria O.; Quaresima, Emma; and de Witt, Paolo, 4,483,869, Cl. 424-301.000.

Signode Corporation: *See*—
Kobiella, Robert J., 4,483,438, Cl. 206-83.500.
Nikolich, Milovan, 4,483,280, Cl. 123-46.0SC.
Nikolich, Milovan, 4,483,474, Cl. 227-8.000.
Wagdy, Mohamed K., 4,483,473, Cl. 227-8.000.

Silver, Gerald: *See*—
Carter, William A.; and Silver, Gerald, 4,483,849, Cl. 424-85.000.

Simmons, Robert B.; and Stermole, David A., to PPG Industries, Inc. Method for removing dibasic calcium hypochlorite scale. 4,483,715, Cl. 134-2.000.

Simmons, Robert B.: *See*—
Stermole, David A.; and Simmons, Robert B., 4,483,842, Cl. 423-474.000.

Simmons, Thomas J.: *See*—
Prophet, Wilson B., Jr.; Wolfe, William G.; and Simmons, Thomas J., 4,483,455, Cl. 220-23.830.

Simonson, John L.: *See*—
Marinak, Michael J.; and Simonson, John L., 4,483,993, Cl. 546-345.000.

Simpson, Peter E.: *See*—
Olson, David E.; Simpson, Peter E.; Melden, Kurt A.; and Dowling, Terence, 4,484,263, Cl. 364-200.000.

Sims, Carl W.: *See*—
Zelinka, Richard J.; and Sims, Carl W., 4,484,061, Cl. 219-301.000.

Sims, Royal W. Hydraulically operated batch-loader for dry mix concrete. 4,483,650, Cl. 414-21.000.

Sims, Steve A.: *See*—
Maschmeyer, Donald M.; Fowler, Allan E.; Sims, Steve A.; and White, G. Eldon, 4,484,016, Cl. 585-510.000.

Singer Company, The: *See*—
Gebert, Frank X., 4,483,033, Cl. 15-3.000.
Ketterer, Stanley J., 4,483,264, Cl. 112-231.000.
Spasiano, Anthony D.; and Jelinek, Vaclav, 4,483,685, Cl. 464-83.000.
Weisz, William, 4,483,263, Cl. 112-158.00A.

Singleton, Marshall T.: *See—*
Parker, Charles E., Jr.; and Singleton, Marshall T., 4,483,314, Cl. 126-221.000.

Sintermetallwerk Krebsoge GmbH: *See—*
Schelb, Bernhard, 4,483,820, Cl. 419-28.000.

Sisto, Konstantin, to Kommandiittiyhtio B. Herrmans Kommanditbolag. Safety spacer. 4,483,586, Cl. 350-97.000.

Skarin, Lars: *See—*
Loof, Goran; and Skarin, Lars, 4,484,020, Cl. 174-68.00C.

Skarvada, Thomas, to Crane Co. Apparatus for generating a lead signal in an antiskid system. 4,484,281, Cl. 364-426.000.

Skarvada, Thomas: *See—*
Cook, Robert D.; and Skarvada, Thomas, 4,484,282, Cl. 364-426.000.

SKF Industrial Trading & Development Co. B.V.: *See—*
Hoffmann, Alfred; and Verburgh, Martin B., 4,483,671, Cl. 425-435.000.

Slamka, Milan; and Rassem, Mamdouh H., to Thalamus Electronics, Inc. Apparatus for the dynamic in-circuit element-to-element comparison testing of electronic digital circuit elements. 4,484,329, Cl. 371-25.000.

Slaninova, Jirina: *See—*
Barth, Tomislav; Jost, Karel; Lebl, Michal; Machova , Alena; Servitova , Linda; and Slaninova, Jirina, 4,483,794, Cl. 260-112.50R.

Slavin, Martin J., to Intech Systems Corp. Electrocardiograph with digitally-printing waveform display. 4,483,346, Cl. 128-710.000.

Smack, James W.: *See—*
Berger, Robert C.; and Smack, James W., 4,483,640, Cl. 405-15.000.

Smeal, William J. Refrigerated air conditioning system using diaphragm pump. 4,483,154, Cl. 62-305.000.

Smith, Daniel M.: *See—*
Borras, Jaime A.; Gonzalez, Ruben J.; Smith, Daniel M.; Suarez, Jose I.; Victor, Alan M.; and Wieczorek, Alfred B., 4,484,153, Cl. 331-10.000.

Smith, Howard W.; and Kulp, Carl R., Jr., to United States of America, Air Force. Osteoclast for whole bone testing. 4,483,198, Cl. 73-794.000.

Smith, James L.: *See—*
MacDonald, Wayne P.; and Smith, James L., 4,483,109, Cl. 52-1.000.

Smith, Jay E., to United States of America, Energy. Linear motion device and method for inserting and withdrawing control rods. 4,484,093, Cl. 310-14.000.

Smith, Joseph E., to Gulf & Western Manufacturing Company. Sealed ball and socket joints capable of disassembly. 4,483,569, Cl. 308-2.00R.

Smith, Joseph J., to Deere & Company. Mounting for connecting a crossbar to a crawler tractor track frame. 4,483,406, Cl. 180-9.500.

SmithKline Beckman Corporation: *See—*
Saunders, Alex M., 4,483,882, Cl. 427-2.000.

Smolik, Robert A. Electrical receptacle box assembly. 4,483,453, Cl. 220-3.500.

Smorgunov, Boris A.: *See—*
Zabelin, Igor V.; Ryabukhin, Jury M.; Baibekov, Murat K.; Devyatkin, Vladimir N.; Kitaigorodsky, Efim A.; Kolomiitsev, Arnold V.; Sorokous, Viktor G.; Chalabaev, Ilias A.; Zuev, Nikolai M.; Medeuov, Chaken K.; Chesnokov, Alexandr S.; Usenov, Seisanbai; Tsidrintsev, Grigory V.; Nikolaev, Mikhail M.; Kolyadzin, Alexandr A.; Smorgunov, Boris A.; Chalov, Alexandr V.; Asafiev, Viktor V.; Ladaria, Oleg V.; Vukolov, Vladimir V.; Sabirov, Khamat K.; and Ivakhno, Fedor A., 4,483,753, Cl. 204-70.000.

Snavely, Harry C. Banjo construction and method and apparatus for making same. 4,483,234, Cl. 84-269.000.

Snell, Louis W. Rationed heat control system. 4,483,479, Cl. 237-8.00R.

Snow, Frederick O.; Hulette, Roger L.; Martinson, Albert M., Jr.; and Gwyn, Peter, to AMCA International Corporation. Vessel loading method. 4,483,655, Cl. 414-786.000.

Snyder, Fred W.: *See—*
Turbak, Albin F.; Snyder, Fred W.; and Sandberg, Karen R., 4,483,743, Cl. 162-100.000.

Sobue, Hideo: *See—*
Ohbuchi, Hiroyuki; and Sobue, Hideo, 4,483,180, Cl. 73-35.000.

S.A. Des Etablissements Staubli (France): *See—*
Palau, Joseph; and Burquier, Jean-Luc, 4,483,510, Cl. 251-149.600.

Societe Anonyme dite: L'Oreal: *See—*
Lang, Gerard; Maignan, Jean; Leveque, Jean-Luc; and Rasseneur, Laurent, 4,483,983, Cl. 544-58.200.

Societe de Fabrication d'Instruments de Mesure: *See—*
Michon, Patrick; and Vauchy, Jean-Marie, 4,483,587, Cl. 350-174.000.

Societe des Electrodes et Refractaires: *See—*
Delhay, Jean-Paul; Dumas, Daniel; and Lacroix, Paul, 4,483,840, Cl. 423-445.000.

Societe Industrielle de Brevets et d'Etudes S.I.B.E.: *See—*
Parel, Jacques, 4,483,186, Cl. 73-118.000.

Societe Nationale Industrielle Aerospatiale: *See—*
Duhamel, Gerard, 4,483,173, Cl. 72-351.000.

Societe pour le Developpement de la Suralimentation HYPERBAR: *See—*
Melchior, Jean; and Andre, Thierry, 4,483,150, Cl. 60-599.000.

Sofiltra-Poelman: *See—*
Develle, Guy; and Regnier, Alain, 4,483,273, Cl. 109-1.00S.

Solar Turbines, Incorporated: *See—*
Faulkner, Robie L., 4,483,137, Cl. 60-39.550.

Solitron Devices, Inc.: *See—*
Franklin, Dennis M., 4,484,213, Cl. 357-51.000.

Solomon, Paul M.: *See—*
Isaac, Randall D.; Ning, Tak H.; and Solomon, Paul M., 4,483,726, Cl. 148-187.000.

Sonix Ltd.: *See—*
Shimamura, Koichi, 4,483,749, Cl. 204-15.000.

Sonoda, Takezo; Shimoyama, Fumioki; Kaziwara, Teruhisa; and Sato, Takahisa, to Nippon Shokubai Kagaku Kogyo Co., Ltd. Desulfurization process for hydrogen sulfide containing gases. 4,483,843, Cl. 423-573.00R.

Sonstore KB: *See—*
Margen, Peter, 4,483,318, Cl. 126-400.000.

Sony Corporation: *See—*
Eguchi, Yasuhito, 4,484,231, Cl. 358-296.000.
Kimizuka, Masanori; and Idei, Nobuyuki, 4,484,242, Cl. 360-130.210.
Wilkinson, James H., 4,484,236, Cl. 360-10.300.
Yoshida, Shuji, 4,484,240, Cl. 360-96.500.

Soremа S.r.l.: *See—*
Gazzoni, Domenico, 4,483,768, Cl. 209-18.000.

Sorokous, Viktor G.: *See—*
Zabelin, Igor V.; Ryabukhin, Jury M.; Baibekov, Murat K.; Devyatkin, Vladimir N.; Kitaigorodsky, Efim A.; Kolomiitsev, Arnold V.; Sorokous, Viktor G.; Chalabaev, Ilias A.; Zuev, Nikolai M.; Medeuov, Chaken K.; Chesnokov, Alexandr S.; Usenov, Seisanbai; Tsidrintsev, Grigory V.; Nikolaev, Mikhail M.; Kolyadzin, Alexandr A.; Smorgunov, Boris A.; Chalov, Alexandr V.; Asafiev, Viktor V.; Ladaria, Oleg V.; Vukolov, Vladimir V.; Sabirov, Khamat K.; and Ivakhno, Fedor A., 4,483,753, Cl. 204-70.000.

Spalding, Don. Cartridge for small arms. 4,483,251, Cl. 102-464.000.

Spangrud, Bruce D.; Gunderson, Paul H.; and Whinston, Ann K., to Off-Shore Diving Equipment. Dry diving suit with wraparound double knee portion and method of making the same. 4,483,019, Cl. 2-2.10R.

Sparks, Roger C., to Second Century Farms, Inc. Exercise machine. 4,483,532, Cl. 272-96.000.

Spasiano, Anthony D.; and Jelinek, Vaclav, to Singer Company, The. Motor isolator pulley. 4,483,685, Cl. 464-83.000.

Spector, George: *See—*
Wood, Lawrence R.; and Spector, George, 4,484,186, Cl. 340-689.000.

Speedy Automatic Chimney Sweep, Inc.: *See—*
Boehland, Burnell G.; and Coutts, Donald G., 4,483,038, Cl. 15-249.000.

Speer, Stephen: *See—*
Evans, Hugh G.; Speer, Stephen; and Christy, James A., 4,483,147, Cl. 60-611.000.

Spelts-Schultz Lumber Co.: *See—*
Berzina, James A., 4,483,101, Cl. 49-380.000.

Spence, Gavin G.: *See—*
Maslanka, William W.; and Spence, Gavin G., 4,483,959, Cl. 524-457.000.

Spencer, Herbert J.: *See—*
Fukui, George M.; Spencer, Herbert J.; and Williams, Laurens R., II, 4,483,926, Cl. 436-16.000.

Spencer, William H.; McManaman, Raymond M.; and Teves, Roy A., to Bell & Howell Company. Document processing systems. 4,483,530, Cl. 271-236.000.

Sperry Corporation: *See—*
Borgerding, William L.; and Patel, Vithal R., 4,484,301, Cl. 364-760.000.
Dettmer, Jay R., 4,484,189, Cl. 340-723.000.
Porter, John R.; and Wagner, Melvin A., 4,484,276, Cl. 364-200.000.
Quernemoen, John M.; Voltz, Timothy R.; Campbell, Richard P.; and Kriscunas, Joseph G., 4,484,270, Cl. 364-200.000.

Spohn, Ralph J.: *See—*
Liu, Huei-Cheng; and Spohn, Ralph J., 4,483,936, Cl. 502-74.000.

Spongh, Rolf T.: *See—*
Olex, Michael B.; and Spongh, Rolf T., 4,484,120, Cl. 318-568.000.

Springer, Helmut: *See—*
Gartner, Roderich; Cornils, Boy; Springer, Helmut; and Lappe, Peter, 4,483,802, Cl. 260-505.00C.

Staats, Peter F.: *See—*
Miller, William R.; and Staats, Peter F., 4,483,446, Cl. 211-153.000.

Stahl, Howard; Bayha, Renee; Fulger, Charles V.; and Turek, Evan J., to General Foods Corporation. Production of mannitol and higher manno-saccharide alcohols. 4,484,012, Cl. 568-863.000.

Stahlecker, Fritz; and Merkel, Heinz, to Stahlecker, Hans, / sen; and Stahlecker, Fritz. Pneumatic fiber control arrangement for open end friction spinning machines. 4,483,136, Cl. 57-401.000.

Stahlecker, Hans: *See—*
Stahlecker, Fritz; and Merkel, Heinz, 4,483,136, Cl. 57-401.000.

Stamicarbon B.V.: *See—*
Thomissen, Petrus J. H., 4,484,005, Cl. 568-350.000.

Standard Oil Company, The: *See—*
Paspek, Stephen C., Jr., 4,483,761, Cl. 208-106.000.

Standard Oil Company (Indiana): *See—*
Cabanaw, Boyd E., 4,483,844, Cl. 423-574.00R.
Hensley, Albert L., Jr.; Miller, Jeffrey T.; Nevitt, Thomas D.; and Tait, A. Martin, 4,483,764, Cl. 208-111.000.

Standard Products Company, The: *See—*
Brenner, Walter, 4,483,951, Cl. 524-82.000.
Harrold, Stanley E., 4,483,893, Cl. 428-90.000.

Stangroom, James E.; and Harness, Ian, to National Research Development Corp., The. Electric field responsive fluids. 4,483,788, Cl. 252-578.000.

Stanton, George E., to Strata Corporation. Method for pumping a liquid from a well and apparatus for use therein. 4,483,662, Cl. 417-53.000.

Stants nee Halliday, Cynthia A.: *See*—
Harbulak, Edward P.; and Stants nee Halliday, Cynthia A., 4,483,711, Cl. 106-1.220.

Staples, Alfred G.: *See*—
Roberts, Gerald E.; and Staples, Alfred G., 4,484,158, Cl. 333-191.000.

Staudinger, Franz: *See*—
Brosa, Erwin; Staudinger, Franz; and Tuchler, Theodor J., 4,483,718, Cl. 134-25.100.

Stauffer Chemical Company: *See*—
Sculthorpe, Donald L., 4,483,838, Cl. 423-321.00R.
Teach, Eugene G., 4,483,706, Cl. 71-88.000.

Ste Look: *See*—
Beyl, Jean J. A.; Bernard, Jean; Guerreau, Rene ; le Faou, Daniel; and Peyre, Henri, 4,483,551, Cl. 280-605.000.

Stearns, William P. Prosthetic device for optimizing speech understanding through adjustable frequency spectrum responses. 4,484,345, Cl. 381-98.000.

Steer, David C.: *See*—
Cox, Roger B.; and Steer, David C., 4,483,782, Cl. 252-174.170.
Cox, Roger B.; and Steer, David C., 4,483,848, Cl. 424-49.000.

Steffes, Helmut, to ITT Industries, Inc. Control arrangement for a hydraulic brake system with an antiskid control device. 4,483,144, Cl. 60-548.000.

Steigerwald, Franz; and Adler, Franz, to Wella Aktiengesellschaft. Two-component packaging for pourable media. 4,483,439, Cl. 206-219.000.

Steiner, John. Bait storage apparatus and technique for fishermen. 4,483,092, Cl. 43-55.000.

Stermole, David A.; and Simmons, Robert B., to PPG Industries, Inc. Method for removing dibasic calcium hypochlorite scale. 4,483,842, Cl. 423-474.000.

Stermole, David A.: *See*—
Simmons, Robert B.; and Stermole, David A., 4,483,715, Cl. 134-2.000.

Sternberg, Stanley R.; Dargel, William O.; Lougheed, Robert M.; McCubbrey, David L.; and Richardson, Ralph E. Neighborhood transformation logic circuitry for an image analyzer system. 4,484,346, Cl. 382-27.000.

Stetson, Earl W.: *See*—
Koch, Robert E.; and Stetson, Earl W., 4,484,247, Cl. 361-128.000.

Stevens, Kenneth V., to Cooper Industries, Inc. Inner diameter and bore gauge. 4,483,078, Cl. 33-148.00R.

Stewart, Alec D.: *See*—
White, James N. J.; Ruxton, David S.; and Stewart, Alec D., 4,484,124, Cl. 318-696.000.

Sticht, Walter; and Schwankhart, Gerhard, to Stiwa-Fertigungstechnik Sticht Gesellschaft M.B.H. Screw driving apparatus. 4,483,219, Cl. 81-57.140.

Stiffler, Jack J.; Karp, Richard A.; Nolan, James M., Jr.; Budwey, Michael J.; and Wallace, David A., to Sequoia Systems, Inc. Modular computer system. 4,484,273, Cl. 364-200.000.

Stihl, Andreas: *See*—
Kohler, Gisbert; and Leuchte, Michael, 4,483,279, Cl. 123-41.650.

Stikeleather, Walter J.: *See*—
Waite, Roland; and Stikeleather, Walter J., 4,483,228, Cl. 83-678.000.

Stiles, Jack L. Rooftop air conditioner conversion unit. 4,483,155, Cl. 62-259.100.

Stiwa-Fertigungstechnik Sticht Gesellschaft M.B.H.: *See*—
Sticht, Walter; and Schwankhart, Gerhard, 4,483,219, Cl. 81-57.140.

Stoddard, William S.: *See*—
Brown, James W.; and Stoddard, William S., 4,484,187, Cl. 340-703.000.

Stogryn, Eugene L.; Savage, David W.; and Sartori, Guido, to Exxon Research & Engineering Co. Process for selective removal of H_2S from mixtures containing H_2S and CO_2 with heterocyclic tertiary aminoalkanols. 4,483,833, Cl. 423-228.000.

Stoll, Ulrich W. Waste disposal landfill. 4,483,641, Cl. 405-129.000.

Stone, Aubrey L.: *See*—
Witte, Arnold C., Jr.; Stone, Aubrey L.; and Woloszyn, Patrick F., 4,483,776, Cl. 252-40.000.

Storage Technology Corporation: *See*—
Fitzpatrick, William B., 4,484,176, Cl. 340-347.0DD.

Story, Joe B., to Myrid Concepts Corporation. Console for video display unit and detached keyboard. 4,483,572, Cl. 312-196.000.

Stout, Edward I.: *See*—
Fanta, George F.; Doane, William M.; and Stout, Edward I., 4,483,950, Cl. 524-48.000.

Stoyanov, Boris P., to Glavna Directsia pri Tvorcheski Fond na Sayuza na Bulgarskite Hudojnitsi (SBH). Display with changeable image and method of its production. 4,483,087, Cl. 40-453.000.

Strata Corporation: *See*—
Stanton, George E., 4,483,662, Cl. 417-53.000.

Streck, Vernon W.: *See*—
Whittenburg, Stephen L.; Aberer, James B.; Edmonds, Albert V.; Yang, Ching-Wen; Streck, Vernon W.; Rodick, Vernon F.; and Enoch, Robert C., 4,484,063, Cl. 219-400.000.

Strout, Emery G.; and Mancini, Armen N., to Schiff Photo Mechanics. High speed, high resolution programmable multiformatting hardcopy video printer. 4,484,233, Cl. 358-302.000.

Stuart, Howard P., to Rockwell International Corporation. Machine tool attachment. 4,483,052, Cl. 29-57.000.

Studio Design, Inc., T/A Rainbow Art Glass: *See*—
Longo, Charles M., 4,483,813, Cl. 264-225.000.

Stupp, Edward H.; Fellows, Mark W.; and Guarnera, Leonard R., to North American Philips Corporation. High frequency ballast-ignition system for discharge lamps. 4,484,108, Cl. 315-219.000.

Suarez, Jose I.: *See*—
Borras, Jaime A.; Gonzalez, Ruben J.; Smith, Daniel M.; Suarez, Jose I.; Victor, Alan M.; and Wieczorek, Alfred B., 4,484,153, Cl. 331-10.000.

Sudbeck, Rainer; and Baumgartner, Hans, to Pierburg GmbH & Co., KG. Clutch for work arrangements, particularly on internal combustion machines, and method for its operation. 4,483,428, Cl. 192-0.070.

Suga, Tadoru. Machine for packaging a commodity integrally with a tray. 4,483,125, Cl. 53-450.000.

Suganuma, Tsuneo: *See*—
Matsumura, Hiroyoshi; Katsuyama, Toshio; and Suganuma, Tsuneo, 4,483,617, Cl. 356-350.000.

Sugawara, Kiyoshi: *See*—
Takeyama, Kokichi; Sugawara, Kiyoshi; and Fukagawa, Yasuyuki, 4,483,528, Cl. 271-9.000.

Sugawara, Shinichi: *See*—
Nakao, Hideo; Fujimoto, Koichi; Ishihara, Sadao; Sugawara, Shinichi; and Igarashi, Isamu, 4,483,855, Cl. 424-246.000.

Sugi, Hidekuni: *See*—
Kanayama, Kenji; Sugi, Hidekuni; Ito, Saburo; and Suzuki, Masatoshi, 4,484,097, Cl. 310-268.000.

Sugie, Mamoru; Toyooka, Takashi; Aoki, Hirokazu; and Kamiyama, Kazuya, to Hitachi, Ltd. Magnetic bubble memory device. 4,484,309, Cl. 365-1.000.

Sugimoto, Hidehiko, to Mitsubishi Denki Kabushiki Kaisha. Series-connected assembly of electronic switches. 4,484,257, Cl. 363-124.000.

Sugimura, Masao: *See*—
Tagami, Katsutoshi; Takahashi, Tsuneo; Yasui, Shinichiro; Sugimura, Masao; and Takahashi, Fumitaka, 4,484,284, Cl. 364-449.000.

Sugisawa, Ko; Matsui, Fumio; Yamamoto, Yozo; Nakanaga, Ryusuke; Takeda, Nobuji; Fujii, Yoshimasa; and Hirano, Yoshitaka, to House Food Industrial Company Limited. Method of preparing dried noodles. 4,483,879, Cl. 426-451.000.

Sugiura, Masahiro; Kandori, Toshio; and Doi, Haruo, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Process for producing silicon nitride. 4,483,839, Cl. 423-344.000.

Sugiyama, Jun: *See*—
Kosaka, Nobutoshi, deceased; Izawa, Shinichi; and Sugiyama, Jun, 4,483,958, Cl. 524-409.000.

Sullivan, Herbert W.; and Cohn, Leonard A. Shared memory computer method and apparatus. 4,484,262, Cl. 364-200.000.

Sullivan, Patrick J.; White, Richard J.; and Bigley, Lloyd M., to Weinman Pump & Supply Company. Apparatus for crushing metal containers and associated method. 4,483,246, Cl. 100-35.000.

Sulzer Brothers, Ltd.: *See*—
Demuth, Hans, 4,483,372, Cl. 139-114.000.

Sumitomo Cement Kabushiki Kaisha: *See*—
Katsuta, Susumu; Adachi, Susumu; and Shuji, Hoshino, 4,483,487, Cl. 241-121.000.

Sumitomo Chemical Company, Limited: *See*—
Baba, Kazuo; Wakatsuki, Kizuku; Sato, Toshimi; and Hikasa, Tadashi, 4,483,939, Cl. 502-127.000.

Sumitomo Electric Industries, Ltd.: *See*—
Okita, Koichi; and Asako, Sigeru, 4,483,901, Cl. 428-315.500.

Sumitomo Electric Industries, Ltd: *See*—
Fujisaki, Masaru; Tsuchida, Tetsuo; Sasajima, Yoichi; Ito, Hirohisa; and Morita, Masahiro, 4,483,729, Cl. 156-222.000.

Summers, Anthony C., to General Signal Corporation. Pin connection of a shaft to closure member of a rotary valve. 4,483,513, Cl. 251-308.000.

Sundstrand Corporation: *See*—
Myers, H. Allen, 4,483,663, Cl. 417-222.000.

Support Systems International, Inc.: *See*—
Paul, Patrick R. D., 4,483,029, Cl. 5-453.000.

Susin, Victor G. Protective holder for hose tip assembly. 4,483,371, Cl. 138-89.400.

Sutherland, Dan: *See*—
Goodman, William D.; and Sutherland, Dan, 4,483,242, Cl. 99-450.600.

Suyama, Ryoji: *See*—
Kushida, Kazuhiko; and Suyama, Ryoji, 4,483,511, Cl. 251-174.000.

Suzuki, Hitoshi; and Morozumi, Tokuro, to Fuji Jukogyo Kabushiki Kaisha. System for measuring crank angle for internal combustion engine. 4,483,183, Cl. 73-116.000.

Suzuki Jidosha Kogyo Kabushiki Kaisha: *See*—
Namba, Yuzuru; and Aoyagi, Kenichi, 4,483,292, Cl. 123-308.000.

Suzuki, Masatoshi: *See*—
Kanayama, Kenji; Sugi, Hidekuni; Ito, Saburo; and Suzuki, Masatoshi, 4,484,097, Cl. 310-268.000.

Suzuki, Nobukazu: *See*—
Takamura, Tsutomu; Imai, Atsuo; and Suzuki, Nobukazu, 4,483,694, Cl. 55-158.000.

Suzuki, Takeshi; Shimizu, Hiroshi; Komori, Nobutoshi; Umeno, Takehiro; and Shimizu, Atsuyoshi, to Chisso Corporation. Process for producing modified polypropylene. 4,483,966, Cl. 525-323.000.

Suzuki, Takeshi: *See*—
Sato, Akihiro; Suzuki, Takeshi; Kikuta, Kazutsune; Chiba, Hiromasa; Uwai, Toshihiro; Matsuda, Kenji; and Hanari, Tohru, 4,483,971, Cl. 526-142.000.

Suzuki, Tomiji: *See*—
Murai, Eiji; Suzuki, Tomiji; Sadamori, Hiroki; and Taguchi, Kazuhito, 4,483,673, Cl. 431-328.000.

Suzuki, Yoshitaka: *See*—
Nogiwa, Masashi; Miyata, Yasunao; Maeda, Tsuyoshi; Kumada, Hajime; and Suzuki, Yoshitaka, 4,483,553, Cl. 280-803.000.

Suzuta, Tatsuo; and Hiratsuka, Nobuo, to Fuji Photo Film Co., Ltd. Microcapsules sensitized with antibody and a method for measurement of lymphocyte using the same based on cell-mediated immunity. 4,483,928, Cl. 436-519.000.

Svahn, Carl M. E.; Merenyi, Ferenc; Karlsson, Lennart E.; and Hanshoff, Gunnar, to KabiVitrum AB. Antifibrinolytically active derivatives of tranexamic acid. 4,483,867, Cl. 424-279.000.

Svihel, Wilhelm: *See*—
Jahr, Alfred; and Svihel, Wilhelm, 4,483,169, Cl. 72-250.000.

Swartz, Raymond K.: *See*—
Dillow, Harry M.; Sansone, Anthony E.; and Swartz, Raymond K., 4,483,808, Cl. 264-22.000.

Swerczek, Thomas W., to University of Kentucky Research Foundation, The. Treatment for contagious equine metritis. 4,483,851, Cl. 424-180.000.

Swimout Overflow Components, Inc.: *See*—
Meredith, David L., 4,483,025, Cl. 4-510.000.

Swiss Aluminium Ltd.: *See*—
Furrer, Peter; Timm, Jurgen; and Wehner, Frank, 4,483,719, Cl. 148-2.000.

Sybron Corporation: *See*—
Blair, James E., 4,483,923, Cl. 435-253.000.

Sylvachem Corporation: *See*—
Phillips, C. Frank, Jr.; and Leavens, Dwight E., 4,483,791, Cl. 260-97.700.

Synthelabo: *See*—
Mahailet, Jean B.; and Gabriel, Jean P., 4,483,852, Cl. 424-195.000.

Syracuse University: *See*—
Schwarz, James A.; and Pasco, Robert W., 4,483,629, Cl. 374-57.000.

Sys-Tec, Inc.: *See*—
Zelinka, Richard J.; and Sims, Carl W., 4,484,061, Cl. 219-301.000.

Szalay, Denes: *See*—
Olasz, Sandor; Szalay, Denes; Kovacs, Jozsef; and Kocsis, Oliver, 4,483,266, Cl. 112-304.000.

Szczecko, Miguel: *See*—
Muhi, Charles; Hamernik, Peter; and Szczecko, Miguel, 4,483,622, Cl. 366-129.000.

Szoka, Frank C., to Liposome Technology Incorporated. Liposomes with glycolipid-linked antibodies. 4,483,929, Cl. 436-533.000.

Szycher, Michael; Dempsey, Donald J.; and Rolfe, Jonathan L., to Thermedics, Inc. Actinic radiation cured polyurethane acrylic copolymer. 4,483,759, Cl. 204-159.240.

T.A.D. Avanti, Inc.: *See*—
Lyle, Stephen V.; and Hanscom, Bradford E., 4,484,036, Cl. 179-84.00A.

Tabak, Samuel A.; and Holland, Robert E., to Mobil Oil Corporation. Process for dewaxing middle distillates. 4,483,760, Cl. 208-60.000.

Tabata, Yukio; and Kawanishi, Toshiyuki, to Ricoh Company, Ltd. Non-impact recording apparatus. 4,484,200, Cl. 346-76.0PH.

Tade, Lee A., III: *See*—
Schukei, Glen E.; and Tade, Lee A., III, 4,483,457, Cl. 220-232.000.

Tagami, Katsutoshi; Takahashi, Tsuneo; Yasui, Shinichiro; Sugimura, Masao; and Takahashi, Fumitaka, to Honda Giken Kogyo Kabushiki Kaisha. Apparatus for visually indicating a current travel route of a vehicle. 4,484,284, Cl. 364-449.000.

Tagawa, Kengo; Nasu, Toshio; Yamada, Takao; Yamashita, Kazuo; and Eto, Tetsuo, to Nippon Kokan Kabushiki Kaisha. Coiled damper element. 4,483,426, Cl. 188-378.000.

Tage Electric Co., Ltd.: *See*—
Mishiro, Shoji, 4,483,571, Cl. 310-323.000.

Taggart, Gerald B.: *See*—
John, Floyd C.; Taylor, Scott R.; and Taggart, Gerald B., 4,483,258, Cl. 110-235.000.

Taguchi, Kazuhito: *See*—
Murai, Eiji; Suzuki, Tomiji; Sadamori, Hiroki; and Taguchi, Kazuhito, 4,483,673, Cl. 431-328.000.

Tague, Steven A.: *See*—
Negi, Virendra S.; and Tague, Steven A., 4,484,300, Cl. 364-755.000.

Tahara, Yoshiyuki; Nagai, Michiko; Kogure, Katsura; Kawase, Shigeo; and Yamaguchi, Teruhito, to Nisshin Flour Milling Co., Ltd. Anti-ulcer compounds. 4,483,871, Cl. 424-312.000.

Tait, A. Martin: *See*—
Hensley, Albert L., Jr.; Miller, Jeffrey T.; Nevitt, Thomas D.; and Tait, A. Martin, 4,483,764, Cl. 208-111.000.

Tajima, Shinobu: *See*—
Umeda, Yasukazu; Tajima, Shinobu; and Kamohara, Toshiyuki, 4,483,418, Cl. 187-29.00R.

Takada, Juichiro. Seat belt retractor. 4,483,494, Cl. 242-107.000.

Takada, Yusaku, to Canon Kabushiki Kaisha. Method of cleaning a transfer material supporting member in an image forming apparatus. 4,483,610, Cl. 355-15.000.

Takagi, Takaaki: *See*—
Kamiya, Kingo; and Takagi, Takaaki, 4,483,485, Cl. 239-585.000.

Takagishi, Haruyoshi: *See*—
Fujikawa, Tsuneo; and Takagishi, Haruyoshi, 4,483,476, Cl. 228-4.100.

Takahashi, Fumitaka: *See*—
Tagami, Katsutoshi; Takahashi, Tsuneo; Yasui, Shinichiro; Sugimura, Masao; and Takahashi, Fumitaka, 4,484,284, Cl. 364-449.000.

Takahashi, Hisayoshi; and Oda, Shoichi, to Mitsubishi Jukogyo K.K. Planetary-roller transmission with elastic roller or ring. 4,483,216, Cl. 74-798.000.

Takahashi, Kenji: *See*—
Sato, Kazuhiro; Murata, Nobuo; Takahashi, Kenji; and Nagahara, Shusaku, 4,484,224, Cl. 358-213.000.

Takahashi, Kotei, to Nissan Motor Company, Limited. Select detent mechanism of an automotive manual transmission. 4,483,213, Cl. 74-475.000.

Takahashi, Masaaki: *See*—
Misawa, Yutaka; Takahashi, Masaaki; and Hachino, Hiroaki, 4,484,214, Cl. 357-52.000.

Takahashi, Toshio: *See*—
Ogata, Masaru; Tawara, Katsuya; Watanabe, Yoshihachi; Matsumoto, Hiroshi; and Takahashi, Toshio, 4,483,866, Cl. 424-273.00R.

Takahashi, Tsuneo: *See*—
Tagami, Katsutoshi; Takahashi, Tsuneo; Yasui, Shinichiro; Sugimura, Masao; and Takahashi, Fumitaka, 4,484,284, Cl. 364-449.000.

Takahashi, Yoshiteru, to Fuji Photo Film Co., Ltd. Brushless motor. 4,484,115, Cl. 318-254.000.

Takami, Akiyoshi, to Olympus Optical Co., Ltd. Illuminating device having optical light guide formed as fibre bundle. 4,483,585, Cl. 350-96.240.

Takami, Toru: *See*—
Ohashi, Hiroyuki; Takami, Toru; Koyama, Noritoshi; Kogure, Yoshio; and Ida, Katsumi, 4,483,873, Cl. 424-331.000.

Takamura, Tsutomu; Imai, Atsuo; and Suzuki, Nobukazu, to Tokyo Shibaura Denki Kabushiki Kaisha. Oxygen gas permselective membrane. 4,483,694, Cl. 55-158.000.

Takano, Takao: *See*—
Ohoka, Masaharu; Katoh, Toshio; Mita, Ryuichi; Kawashima, Nobuyuki; Higuchi, Chojiro; Kawashima, Nobuhiro; Yamaguchi, Akihiro; Nagai, Shousuke; and Takano, Takao, 4,484,003, Cl. 562-574.000.

Takawashi, Tamio: *See*—
Yamada, Shigeo; Takawashi, Tamio; and Sakakibara, Toshimitsu, 4,484,051, Cl. 219-69.00C.

Takayama, Akira: *See*—
Kamada, Hiroshi; and Takayama, Akira, 4,484,162, Cl. 333-219.000.

Takeda, Nobuji: *See*—
Sugisawa, Ko; Matsui, Fumio; Yamamoto, Yozo; Nakanaga, Ryusuke; Takeda, Nobuji; Fujii, Yoshimasa; and Hirano, Yoshitaka, 4,483,879, Cl. 426-451.000.

Takeda, Nobuo: *See*—
Nishizawa, Jun-ichi; Ohmi, Tadahiro; and Takeda, Nobuo, 4,484,207, Cl. 357-16.000.

Takekawa, Hiroshi, to Olympus Optical Co., Ltd. Method of automatically analyzing chemical substances and an automatic chemical analyzer. 4,483,927, Cl. 436-43.000.

Takemae, Yoshihiro: *See*—
Nakano, Tomio; Nakano, Masao; Takemae, Yoshihiro; Tsuge, Norihisa; and Ohira, Tsuyoshi, 4,484,312, Cl. 365-233.000.

Takemoto, Toyoki; Fujita, Tsutomu; Sakai, Hiroyuki; and Yamada, Haruyasu, to Matsushita Electric Industrial Co., Ltd. Oxide walled emitter. 4,484,211, Cl. 357-50.000.

Takeuchi, Hiroaki; Kawaguchi, Hiroshi; Nishiwaki, Kiyoshi; Toba, Fujio; and Nomura, Yoshihisa, to Aisin Seiki Kabushiki Kaisha; and Toyota Jidosha Kogyo Kabushiki Kaisha. Master cylinder. 4,483,145, Cl. 60-578.000.

Takeuchi, Toshiyasu: *See*—
Toya, Matsumi; and Takeuchi, Toshiyasu, 4,483,270, Cl. 118-694.000.

Takeyama, Kokichi; Sugawara, Kiyoshi; and Fukagawa, Yasuyuki, to Fuji Xerox Co., Ltd. Paper sheet feeding apparatus for copying machine. 4,483,528, Cl. 271-9.000.

Talasz, Johann, to J. M. Voith, GmbH. Restrictor collar for installation in the leakage water discharge pipes of turbines and pumps. 4,483,370, Cl. 138-45.000.

Talbot, Michael A.: *See*—
Taylor, Michael; Withnall, Malcolm D. N.; and Talbot, Michael A., 4,483,459, Cl. 221-14.000.

Tallant, James C., II; and Hettiger, James, to RCA Corporation. Automatic kinescope bias control system compensated for sense point impedance variations. 4,484,227, Cl. 358-242.000.

Tamag Basel AG: *See*—
Egri, Laszlo, 4,483,352, Cl. 131-296.000.

Tamanoi, Teruo: *See*—
Kasai, Shunichi; Ogata, Takashi; Tamanoi, Teruo; and Hosaka, Hiroshi, 4,483,845, Cl. 423-617.000.

Tamaya, Hiroshi: *See*—
Yamamoto, Tamio; and Tamaya, Hiroshi, 4,483,976, Cl. 528-295.000.

Tamosauskas, Albert E., to PPG Industries, Inc. Antioxidants and reinforced polymers and oil-in-water emulsions of antioxidants. 4,483,948, Cl. 523-205.000.

Tanaami, Hiroshi: *See*—
Araya, Katsutoshi; and Tanaami, Hiroshi, 4,483,390, Cl. 165-104.320.
Tanaka, John S. Sound dampening device for telephones. 4,483,414, Cl. 181-242.000.
Tanaka, Kenkichi: *See*—
Ando, Masao; Tanaka, Kenkichi; and Sato, Kiroku, 4,483,809, Cl. 264-53.000.
Tandem Computers Incorporated: *See*—
Katzman, James A.; Bartlett, Joel F.; Bixler, Richard M.; Davidow, William H.; Despotakis, John A.; Graziano, Peter J.; Green, Michael D.; Greig, David A.; Hayashi, Steven J.; Mackie, David R.; McEvoy, Dennis L.; Treybig, James G.; and Wierenga, Steven W., 4,484,275, Cl. 364-200.000.
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Fujimura, Isao; Nakajima, Sadaaki; Abe, Morio; and Taniguchi, Masahiko, 4,483,897, Cl. 428-288.000.
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Junkermann, Howard C., 4,483,070, Cl. 30-296.00R.
Tanner, Hans, to George Fischer Ltd. Process for compacting granular materials. 4,483,383, Cl. 164-37.000.
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Adadurov, Gennady A.; Bavina, Tamara V.; Breusov, Oleg N.; Drobyshev, Viktor N.; Messinev, Mikhail J.; Rogacheva, Alexandra I.; Anasiin, Alexandr V.; Apollonov, Vladimir N.; Dremin, Anatoly N.; Doronin, Valentin N.; Dubovitsky, Fedor I.; Zemlyakova, Lidia G.; Pershin, Sergei V.; and Tatsy, Viktor F., 4,483,836, Cl. 423-290.000.
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Taylor, Charles W.: *See*—
Washburn, Malcolm E.; and Taylor, Charles W., 4,483,932, Cl. 501-117.000.
Taylor, Michael; Withnall, Malcolm D. N.; and Talbot, Michael A., to Mars Limited. Dispensing machine. 4,483,459, Cl. 221-14.000.
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Teach, Eugene G., to Stauffer Chemical Company. Haloacyl and thiohaloacyl aryl-substituted oxazolidines and thiazolidines herbicidal antidotes. 4,483,706, Cl. 71-88.000.
Technovators, Inc.: *See*—
Fisher, Glen W., 4,483,625, Cl. 366-297.000.
Teijin Limited: *See*—
Yamamoto, Tamio; and Tamaya, Hiroshi, 4,483,976, Cl. 528-295.000.
TEK Precision Co., Ltd.: *See*—
Knoll, Frederick A., 4,483,080, Cl. 33-286.000.
te Kolste, Jan W., to Wulfson Beheer BV, a part interest. Saw guide for a power-driven circular hand saw machine or a jig saw machine. 4,483,071, Cl. 30-376.000.
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Metz, Arthur J., 4,484,147, Cl. 330-156.000.
TELDEC Telefunken-Decca-Schallplatten GmbH: *See*—
Redlich, Horst, 4,484,320, Cl. 369-132.000.
Telease, Inc.: *See*—
Block, Robert S.; and Lull, John M., 4,484,217, Cl. 358-84.000.
Telecommunications Radioelectrique et Telephoniques: *See*—
Ferrieu, Gilbert M. M.; Hamel, Roger B. J.; Lefort, Emmanuel; and Moliere, Francoise, 4,484,034, Cl. 179-81.00B.
Telefonaktiebolaget L M Ericsson: *See*—
Arvidsson, Erik R., 4,484,194, Cl. 343-17.700.
Haulin, Tord L., 4,484,145, Cl. 330-9.000.
Telefunken Electronic GmbH: *See*—
Krumrein, Gerhard; and Hantsch, Hartmut, 4,483,605, Cl. 354-417.000.
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Terui, Mituru; and Yoshida, Youki, to Ikeda Bussan Co., Ltd. Head rest stay retaining device. 4,483,565, Cl. 297-410.000.
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Ono, Tetsuji; Ichihara, Shoichi; Ohata, Tomohisa; and Terui, Sadao, 4,483,940, Cl. 502-159.000.
Terzian, Beri A. Balanced chronograph digital time display. 4,483,628, Cl. 368-82.000.
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Panthofer, Rudolf, 4,483,368, Cl. 137-614.040.
Teves, Roy A.: *See*—
Spencer, William H.; McManaman, Raymond M.; and Teves, Roy A., 4,483,530, Cl. 271-236.000.
Texaco Development Corporation: *See*—
Marion, Charles P.; and Jahnke, Frederick C., 4,483,690, Cl. 48-61.000.
Texaco Inc.: *See*—
Lin, Jiang-Jen, 4,484,002, Cl. 560-232.000.
McEntire, Edward E.; and Gipson, Robert M., 4,483,997, Cl. 549-529.000.
Sanderson, John R.; Marquis, Edward T.; and Lin, Jiang-Jen, 4,483,998, Cl. 549-533.000.
Witte, Arnold C., Jr.; Stone, Aubrey L.; and Woloszyn, Patrick F., 4,483,776, Cl. 252-40.000.
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Heintz, Lawrence T., 4,483,462, Cl. 222-63.000.
Texas Instruments Incorporated: *See*—
Brantingham, George L., 4,484,261, Cl. 364-200.000.
Everett, Chauncey L.; Houston, Theodore W.; and Darley, Henry M., 4,484,310, Cl. 365-174.000.
Grenier, Aime J.; and Peterson, Robert W., 4,484,165, Cl. 335-165.000.
Ott, Granville E., 4,484,188, Cl. 340-728.000.
Thakur, Pramod C., to Conoco Inc. Dust control in longwall mining. 4,483,238, Cl. 98-50.000.
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Slamka, Milan; and Rassem, Mamdouh H., 4,484,329, Cl. 371-25.000.
Thermedics, Inc.: *See*—
Szycher, Michael; Dempsey, Donald J.; and Rolfe, Jonathan L., 4,483,759, Cl. 204-159.240.
Thibault, Henry: *See*—
Leightner, Robert A.; and Thibault, Henry, 4,483,598, Cl. 350-558.000.
Thiele, Kurt; Ahmed, Quazi; Adrian, Rudolf; and Jahn, Ulrich, to Siegfried Aktiengesellschaft. Phenoxy alkanoic acid derivatives having the ability to lower the level of fatty substances in the blood. 4,483,999, Cl. 560-57.000.
Thierman, Robert B. Interproximal dental instrument. 4,483,676, Cl. 433-142.000.
Thiers, Christiaan G., to Agfa-Gevaert, N.V. Improving the color balance of multicolor prints by exposure through contrast reducing light distribution means. 4,483,916, Cl. 430-236.000.
Thigpen, Ben B., to Western Geophysical Company of America. Cop switch-position encoder, method and apparatus. 4,484,314, Cl. 367-58.000.
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Thurston, James R.; and Berkley, George A., 4,483,250, Cl. 102-254.000.
Thire, Jacques, to U.S. Philips Corporation. Junction-type field-effect transistor and its manufacture. 4,484,208, Cl. 357-22.000.
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Thomas, Richard. Sawbuck. 4,483,525, Cl. 269-295.000.
Thomissen, Petrus J. H., to Stamicarbon B.V. Process for the preparation of cyclohexyl cyclohexanone. 4,484,005, Cl. 568-350.000.
Thompson, David J.: *See*—
Harrison, Kenneth J.; Raynes, Edward P.; Saunders, Frances C.; and Thompson, David J., 4,483,594, Cl. 350-349.000.
Thompson, Gregory J.: *See*—
Lomas, David A.; and Thompson, Gregory J., 4,483,276, Cl. 122-4.00D.
Thompson, James E.; and Broaddus, Charles D., to Procter & Gamble Company, The. Peroxygen bleach activators and bleaching compositions. 4,483,778, Cl. 252-94.000.
Thompson, Timothy J., to Marathon Oil Company. Reactor catalyst removal valve. 4,483,206, Cl. 73-863.850.
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Aubourg, Philippe; Huignard, Jean P.; and Hareng, Michel, 4,483,592, Cl. 350-342.000.
Chambron, Edmond, 4,484,121, Cl. 318-640.000.
Georgel, Jean, 4,484,198, Cl. 343-880.000.
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Facon, Michel; and Julien, Robert, 4,484,112, Cl. 315-399.000.
Thomson, Ian, to Canadian Astronautics Limited. Direct reading dosimeter. 4,484,076, Cl. 250-370.000.
Thor Power Tool Company: *See*—
Vonhoff, William, Jr., 4,483,402, Cl. 173-134.000.
Thornburg, David D., to Koala Technologies Corporation. Touch tablet data device. 4,484,026, Cl. 178-18.000.

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Thurston, James R.; and Berkley, George A., to Thiokol Corporation. Flare manual safety device. 4,483,250, Cl. 102-254.000.
Thyssen Industrie Aktiengesellschaft: *See*—
Kreiskorte, Heinz, 4,483,621, Cl. 366-111.000.
Tiedeman, Robert K., to Curtiss-Wright Flight Systems, Inc. Dual function torque limiter/no-back device. 4,483,429, Cl. 192-18.00R.
Tillmann, Horst, to Dorma-Baubechlag GmbH & Co. KG. Automatic door closer. 4,483,043, Cl. 16-56.000.
Timm, Horst, to Blaupunkt-Werke GmbH. Miniature casette tape recorder-player. 4,484,239, Cl. 360-92.000.
Timm, Jurgen: *See*—
Furrer, Peter; Timm, Jurgen; and Wehner, Frank, 4,483,719, Cl. 148-2.000.
Tinti, Maria O.; Quaresima, Emma; and de Witt, Paolo, to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A. Thiocarnitines, process for their preparation and pharmaceutical compositions containing same. 4,483,869, Cl. 424-301.000.
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Takeuchi, Hiroaki; Kawaguchi, Hiroshi; Nishiwaki, Kiyoshi; Toba, Fujio; and Nomura, Yoshihisa, 4,483,145, Cl. 60-578.000.
Toei Denki Kabushiki Kaisha: *See*—
Ono, Tadahiro, 4,484,129, Cl. 318-807.000.
Togawa, Tatsuo; Nemoto, Tetsu; and Tsubakimoto, Hirohisa, to Anima Corporation. Thermal pulse flowmeter. 4,483,200, Cl. 73-861.050.
Tokoro, Hiroharu: *See*—
Oshima, Yujiro; Asai, Kiyokazu; and Tokoro, Hiroharu, 4,483,179, Cl. 73-35.000.
Tokuda, Kanji; and Nakauchi, Kenji, to Fuji Photo Film Co., Ltd. Automatic winding detection apparatus for a web. 4,483,492, Cl. 242-57.000.
Tokyo Aircraft Instrument Co., Ltd.: *See*—
Nakamura, Shuji, 4,483,191, Cl. 73-187.000.
Tokyo Kogaku Kikai Kabushiki Kaisha: *See*—
Kuwabara, Tetsuo, 4,483,899, Cl. 428-213.000.
Tokyo Ohka Kogyo Kabushiki Kaisha: *See*—
Nakane, Hisashi; Uehara, Akira; Miyazaki, Shigekazu; Kiyota, Hiroyuki; and Hijikata, Isamu, 4,483,651, Cl. 414-217.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Akizawa, Tetsuo; and Ishimizu, Hiroshi, 4,483,441, Cl. 206-328.000.
Andow, Fumio, 4,484,246, Cl. 361-71.000.
Komatsu, Shigeru; Nakamura, Michio; and Fujita, Katsuji, 4,484,212, Cl. 357-51.000.
Nagano, Katsumi, 4,484,091, Cl. 307-471.000.
Ogura, Ichiro; and Itoh, Ayao, 4,483,202, Cl. 73-861.270.
Ohba, Hiroshi; and Horino, Shigeo, 4,483,124, Cl. 53-54.000.
Oida, Susumu, 4,483,161, Cl. 68-23.600.
Sato, Takeo, 4,484,100, Cl. 313-44.000.
Shizuno, Masaaki, 4,484,348, Cl. 382-48.000.
Takamura, Tsutomu; Imai, Atsuo; and Suzuki, Nobukazu, 4,483,694, Cl. 55-158.000.
Uchida, Yukimasa, 4,484,209, Cl. 357-23.000.
Tomm, Erwin: *See*—
Moss, Theron C.; and Tomm, Erwin, 4,483,035, Cl. 15-153.000.
Tomoe Special Machine Co., Ltd.: *See*—
Watanabe, Michitoshi, 4,483,529, Cl. 271-131.000.
Tomoyori, Kageyuki; Uchida, Tatsuo; and Noda, Tadashi, to Konishiroku Photo Industry Co., Ltd. Polishing method for electrophotographic photoconductive member. 4,483,107, Cl. 51-281.00R.
Tonelli, Guido A., to Alfa-Laval AB. Teat cup for a milking machine. 4,483,272, Cl. 119-14.320.
Too, Elena H.; and Marx, Daniel R., to OMI International Corporation. Compositions and method for stripping gold from copper substrates. 4,483,739, Cl. 156-656.000.
Toppan Printing Co., Ltd.: *See*—
Nomura, Toshiaki, 4,483,464, Cl. 222-83.000.
Torghele, Flavio, to TREG S.p.A. Process and device for vulcanizing with continuity elastomeric material hoses. 4,483,815, Cl. 264-566.000.
Tornier, Alain, to Tornier S.A. Nails for femoral fractures. 4,483,335, Cl. 128-92.0BC.
Tornier S.A.: *See*—
Tornier, Alain, 4,483,335, Cl. 128-92.0BC.
Toshiba Heating Appliances Co., Ltd.: *See*—
Kojima, Nobuyuki; and Kawashima, Etsuko, 4,483,313, Cl. 126-92.00R.
Toshiba Kikai Kabushiki Kaisha: *See*—
Manabe, Takao; Kamahora, Fumio; Yoshida, Tetsu; and Kanemoto, Masakazu, 4,484,118, Cl. 318-561.000.
Ono, Tadahiro, 4,484,129, Cl. 318-807.000.
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Christidis, Yani; Fournex, Robert; and Tournemine, Colette, 4,483,868, Cl. 424-282.000.
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Toya, Matsumi; and Takeuchi, Toshiyasu, to Kabushiki Kaisha Tiyoda Seisakusho. Apparatus for embedding biological specimens in paraffin or the like preparatory to microscopical examination. 4,483,270, Cl. 118-694.000.
Toybox Corporation: *See*—
Matsumoto, Hajime; Okada, Kouji; and Sano, Nobuo, 4,483,077, Cl. 33-125.00A.
Toyo Chemical Laboratories, Inc.: *See*—
Fujisawa, Mutsuo; Otani, Mitsuru; Ohtsu, Haruhiro; and Kameda, Tsutomu, 4,483,679, Cl. 433-228.000.
Toyoda, Takashi: *See*—
Ohba, Yozo; Toyoda, Takashi; Yamanaka, Masaaki; Hashimoto, Fukashi; and Kakizaki, Tetsuji, 4,483,965, Cl. 525-322.000.
Toyooka, Takashi: *See*—
Sugie, Mamoru; Toyooka, Takashi; Aoki, Hirokazu; and Kamiyama, Kazuya, 4,484,309, Cl. 365-1.000.
Toyoshima, Toshiya: *See*—
Inada, Tomoki; Mizuniwa, Seiji; Toyoshima, Toshiya; Fukumoto, Masashi; and Nakagawa, Junkichi, 4,483,735, Cl. 156-607.000.
Toyota Jidosha Kabushiki Kaisha: *See*—
Ogawa, Nitsuo; and Shimizu, Akira, 4,483,170, Cl. 72-327.000.
Ueno, Makoto; and Hori, Kohei, 4,483,288, Cl. 123-198.00F.
Yamada, Yasuo; Nagasawa, Shiro; Niwa, Takao; and Gouno, Takeshi, 4,483,301, Cl. 123-489.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Muto, Masahito, 4,484,279, Cl. 364-426.000.
Takeuchi, Hiroaki; Kawaguchi, Hiroshi; Nishiwaki, Kiyoshi; Toba, Fujio; and Nomura, Yoshihisa, 4,483,145, Cl. 60-578.000.
Toyota Jidoshakogyo Kabushiki Kaisha: *See*—
Akagi, Motonobu; Kawabata, Yasuhiro; and Hattori, Kyo, 4,483,369, Cl. 137-625.120.
Trane Company, The: *See*—
Oudenhoven, Gary L., 4,483,156, Cl. 62-324.100.
Transwave: *See*—
Graham, Martin H.; and Callaway, Enoch, 4,484,035, Cl. 179-84.0VF.
Travers, Roger; Camus, Jean-Paul; and Bronner, Jean-Claude, to CEM Compagnie Electro-Mecanique. Process and apparatus for the homogeneous, electromagnetic induction heating with transverse flux of conducting and non-magnetic flat products. 4,484,048, Cl. 219-10.430.
TREG S.p.A.: *See*—
Torghele, Flavio, 4,483,815, Cl. 264-566.000.
Treise, Jan E.; and Nyhus, Orville K., to Rockwell International Corporation. Phase programmable signal generator means. 4,484,296, Cl. 364-607.000.
Tressler, Michael B.: *See*—
Provanzano, Salvatore R.; Aldrich, Wilbert H.; D'Angelo, Robert A.; Drottar, Emil P.; Finnegan, John J., Jr.; Heom, James; Hill, Lawrence W.; Malcolm, Ronald D.; Nollet, Michael C.; Perlman, Baruch S.; Tressler, Michael B.; Van Schalkwyk, John E.; and Webb, Kincade N., 4,484,303, Cl. 364-900.000.
Treybig, James G.: *See*—
Katzman, James A.; Bartlett, Joel F.; Bixler, Richard M.; Davidow, William H.; Despotakis, John A.; Graziano, Peter J.; Green, Michael D.; Greig, David A.; Hayashi, Steven J.; Mackie, David R.; McEvoy, Dennis L.; Treybig, James G.; and Wierenga, Steven W., 4,484,275, Cl. 364-200.000.
Tri Tool Inc.: *See*—
Nall, Lawson H.; and Miller, Richard E., 4,483,223, Cl. 82-4.00C.
Nall, Lawson H.; and Miller, Richard E., 4,483,522, Cl. 269-48.100.
Trick, Robert E., to Medical Engineering Corporation. Rod-type penile implant. 4,483,331, Cl. 128-79.000.
Trimble, Eldridge. Stuffing box removal apparatus. 4,483,057, Cl. 29-252.000.
Tritec Industries, Inc.: *See*—
Hauser, Hugo, 4,483,665, Cl. 417-401.000.
Trnka, John T.: *See*—
Lovgren, Jeffrey L.; Thomas, George C.; and Trnka, John T., 4,484,178, Cl. 340-347.0DA.
Troeh, Frederick R. Variable flush water closet. 4,483,024, Cl. 4-324.000.
Trombka, Jacob I.: *See*—
Evans, Larry G.; and Trombka, Jacob I., 4,483,817, Cl. 376-159.000.
Trotsenko, Vasily D.: *See*—
Khismatulin, Enver R.; Shel, Marat M.; Novikov, Alexandr N.; Makarov, Viktor M.; Serov, Petr G.; Trotsenko, Vasily D.; Nikolsky, Sergei I.; and Pimshtein, Pavel G., 4,483,166, Cl. 72-137.000.
Trotter, Jimmy R.: *See*—
Joyner, Frederick B.; Trotter, Jimmy R.; and McConnell, Richard L., 4,483,969, Cl. 525-437.000.
Troue, Harden H., to Union Carbide Corporation. Process for producing textured coatings. 4,483,884, Cl. 427-54.100.
Trudell, Gerald R.; Kraska, Theodore F.; and Barber, Dennis W., to APX Group, Inc. Double walled tubing and process for producing same. 4,483,061, Cl. 29-523.000.
Trungold, Emanuel H. Bolt tension indicating means. 4,483,648, Cl. 411-10.000.
TRW Inc.: *See*—
Cornyn, William S., Jr.; Barrett, John S.; Brabston, Donald C., Jr.; Camana, Peter C.; McAferty, James M.; Nelson, Steven P.; and Schy, Stuart T., 4,484,081, Cl. 250-563.000.
Tsidrintsev, Grigory V.: *See*—
Zabelin, Igor V.; Ryabukhin, Jury M.; Baibekov, Murat K.; Devyatkin, Vladimir N.; Kitaigorodsky, Efim A.; Kolomiitsev, Arnold V.; Sorokous, Viktor G.; Chalabaev, Ilias A.; Zuev, Nikolai M.; Medeuov, Chaken K.; Chesnokov, Alexandr S.; Usenov, Seisanbai; Tsidrintsev, Grigory V.; Nikolaev, Mikhail M.; Kolyadzin, Alexandr A.; Smorgunov, Boris A.; Chalov, Alexandr V.; Asafiev, Viktor V.; Ladaria, Oleg V.; Vukolov, Vladimir V.; Sabirov, Khamat K.; and Ivakhno, Fedor A., 4,483,753, Cl. 204-70.000.

Tsubakimoto, Hirohisa: *See*—
Togawa, Tatsuo; Nemoto, Tetsu; and Tsubakimoto, Hirohisa, 4,483,200, Cl. 73-861.050.
Tsuchida, Tetsuo: *See*—
Fujisaki, Masaru; Tsuchida, Tetsuo; Sasajima, Yoichi; Ito, Hirohisa; and Morita, Masahiro, 4,483,729, Cl. 156-222.000.
Tsuge, Norihisa: *See*—
Nakano, Tomio; Nakano, Masao; Takemae, Yoshihiro; Tsuge, Norihisa; and Ohira, Tsuyoshi, 4,484,312, Cl. 365-233.000.
Tsuji, Nobuhiko; Nakamura, Keijiroh; Endoh, Koichi; Hamada, Toshiyoshi; and Ishida, Keiichi, to Fuji Electric Company, Ltd. System for controlling a printer in a blood sugar analyzer. 4,483,924, Cl. 435-288.000.
Tsukamoto, Masao; Kawamoto, Kinji; and Uya, Masaru, to Matsushita Electric Industrial Co., Ltd. Electronic musical instrument. 4,483,229, Cl. 84-1.010.
Tsunaki, Ichiro: *See*—
Noda, Takeo; and Tsunaki, Ichiro, 4,483,405, Cl. 180-6.500.
Tsunekawa, Masura; and Naito, Yoshihiro, to Aisin Seiki Kabushiki Kaisha. Output control system for Stirling engines. 4,483,142, Cl. 60-521.000.
Tsunekawa, Tokuichi, to Canon Kabushiki Kaisha. Image sensor. 4,484,223, Cl. 358-213.000.
Tuchler, Theodor J.: *See*—
Bross, Erwin; Staudinger, Franz; and Tuchler, Theodor J., 4,483,718, Cl. 134-25.100.
Tufico Corporation: *See*—
Green, Jerry T.; and Beasley, Max M., 4,483,261, Cl. 112-79.00R.
Tults, Juri, to RCA Corporation. Shared counter arrangement for a digital frequency locked loop tuning system for selectively measuring the frequencies of the LO and IF signals. 4,484,221, Cl. 358-191.100.
Turbak, Albin F.; Snyder, Fred W.; and Sandberg, Karen R., to International Telephone and Telegraph Corporation. Microfibrillated cellulose. 4,483,743, Cl. 162-100.000.
Turek, Evan J.: *See*—
Stahl, Howard; Bayha, Renee; Fulger, Charles V.; and Turek, Evan J., 4,484,012, Cl. 568-863.000.
Turlik, Iwons: *See*—
Devenyi, Tibor F.; and Turlik, Iwona, 4,483,541, Cl. 277-3.000.
Turner, Jesse H.: *See*—
Wallace, Elmer E.; and Turner, Jesse H., 4,483,672, Cl. 431-20.000.
Turner, Jonathan S., to AT&T Bell Laboratories. Packet load monitoring by trunk controllers. 4,484,326, Cl. 370-60.000.
Turner, S. Richard: *See*—
Agarwal, Pawan K.; Turner, S. Richard; Lundberg, Robert D.; and Evans, Morris L., 4,483,960, Cl. 524-499.000.
Tussing, Dennis M. Revolver empty chamber indicia. 4,483,088, Cl. 42-1.00D.
Tuttle, John E. B., to United States of America, Army. Test set for transient protection devices. 4,484,136, Cl. 324-158.00R.
Tuttle, Ronald R., to Key Pharmaceuticals, Inc. Hyperkinetic child treatment agent. 4,483,860, Cl. 424-260.000.
Twedt, Lynn O.: *See*—
Shelton, Kenneth B.; Herkert, Klaus H.; and Twedt, Lynn O., 4,483,045, Cl. 16-95.00R.
Twin Disc, Inc.: *See*—
Black, James B., 4,483,684, Cl. 464-68.000.
Tyndell, Brian P.: *See*—
Dumbaugh, William H., Jr.; and Tyndell, Brian P., 4,483,931, Cl. 501-41.000.
Uchida, Tatsuo: *See*—
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Yamada, Yasuo; Nagasawa, Shiro; Niwa, Takao; and Gouno, Takeshi, to Nippondenso Co., Ltd.; and Toyota Jidosha Kabushiki Kaisha.

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Yamaguchi, Elsine S., to Chevron Research Company. Lubricating oil compositions containing overbased calcium sulfonates. 4,483,775, Cl. 252-32.70E.

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Yamauchi, Masamichi, to Citizen Watch Company Limited. Illumination level/musical tone converter. 4,483,230, Cl. 84-1.030.

Yamaue, Matsuei; Fukutomi, Sadao; Fukura, Seiichi; and Sato, Fumihiko, to Asahi Kasei Kogyo Kabushiki Kaisha. Nitrocellulose composition and process for production thereof. 4,483,714, Cl. 106-279.000.

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Elser, Dieter, 4,483,237, Cl. 91-368.000.

Zaidan Hojin Handotai Kenkyu Shinkokai: *See*—
Nishizawa, Jun-ichi; Ohmi, Tadahiro; and Takeda, Nobuo, 4,484,207, Cl. 357-16.000.

Zale Corporation: *See*—
Gray, Jerry B.; Adams, Cuba M.; and Christensen, Larry B., 4,484,031, Cl. 179-18.0BE.

Zampino, Frank L.: *See*—
Howard, Curtiss G.; Jordan, Lester W.; Yaworsky, Chester E.; and Zampino, Frank L., 4,484,058, Cl. 219-121.0EJ.

Zeidler, Georg: *See*—
Eilingsfeld, Heinz; Hansen, Guenter; Seybold, Guenther; and Zeidler, Georg, 4,483,795, Cl. 534-756.000.

Zelinka, Richard J.; and Sims, Carl W., to Sys-Tec, Inc. Temperature control system for liquid chromatographic columns employing a thin film heater/sensor. 4,484,061, Cl. 219-301.000.

Zemlyakova, Lidia G.: *See*—
Adadurov, Gennady A.; Bavina, Tamara V.; Breusov, Oleg N.; Drobyshev, Viktor N.; Mesinev, Mikhail J.; Rogacheva, Alexandra I.; Ananiin, Alexandr V.; Apollonov, Vladimir N.; Dremin, Anatoly N.; Doronin, Valentin N.; Dubovitsky, Fedor I.; Zemlyakova, Lidia G.; Pershin, Sergei V.; and Tatsy, Viktor F., 4,483,836, Cl. 423-290.000.

Zenith Electronics Corporation: *See*—
Banach, Frank G., 4,484,222, Cl. 358-196.000.

Zimmer, Richard: *See*—
Brugger, Franz; Burckhardt, Manfred; Grosaner, Horst; Kostelezky, Walter; Schlosser, Siegfried; and Zimmer, Richard, 4,484,280, Cl. 364-426.000.

Zimmerman, Herman M., to Union Carbide Corporation. Intumescent material-coated galvanic cells. 4,483,908, Cl. 429-8.000.

Zipay, Albert J.; and Gorzegno, Walter P., to Foster Wheeler Energy Corporation. Steam separating apparatus and separators used therein. 4,483,696, Cl. 55-186.000.

Zirrilo, James A. Wheel chair auxiliary drive means. 4,483,548, Cl. 280-289.0WC.

Zmolek, Alfred J.; and Van Der Voort, Douglas F., to Merrick Foods, Inc. Adjustable feeding unit. 4,483,274, Cl. 119-61.000.

Zoecon Corporation: *See*—
Kohn, Gustave K.; and Bamberg, Joe T., 4,483,992, Cl. 546-302.000.
McDaniel, Joe D., Jr.; and Pruitt, Paul L., 4,483,123, Cl. 53-428.000.

Zones, Stacey I., to Chevron Research Company. Process for preparing molecular sieves using imidazole template. 4,483,835, Cl. 423-277.000.

Zuech, Ernest A.: *See*—
Nelson, William T.; and Zuech, Ernest A., 4,484,014, Cl. 585-255.000.

Zuev, Nikolai M.: *See*—
Zabelin, Igor V.; Ryabukhin, Jury M.; Baibekov, Murat K.; Devyatkin, Vladimir N.; Kitaigorodsky, Efim A.; Kolomiitsev, Arnold V.; Sorokous, Viktor G.; Chalabaev, Ilias A.; Zuev, Nikolai M.; Medeuov, Chaken K.; Chesnokov, Alexandr S.; Usenov, Seisanbai; Tsidrintsev, Grigory V.; Nikolaev, Mikhail M.; Kolyadzin, Alexandr A.; Smorgunov, Boris A.; Chalov, Alexandr V.; Asafiev, Viktor V.; Ladaria, Oleg V.; Vukolov, Vladimir V.; Sabirov, Khamat K.; and Ivakhno, Fedor A., 4,483,753, Cl. 204-70.000.

Zukowski, Dwayne R.: *See*—
Madoche, Robert D.; Madoche, Dan C.; Lepps, Neil O.; and Zukowski, Dwayne R., 4,483,363, Cl. 137-329.040.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 20TH DAY OF NOVEMBER, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Allied Corporation: *See*—
Spaulding, Tedford H., Re. 31,742, Cl. 339-258.00R.

Arora, Mulk R.; and Randall, John J., Jr., to Sprague Electric Company. AC Etching of aluminum capacitor foil. Re. 31,743, Cl. 204-129.900.

Asahi-Dow Limited: *See*—
Watanabe, Seizaburo; and Matsuki, Yutaka, Re. 31,744, Cl. 521-95.000.

Broughton, James A., to Brown & Williamson Tobacco Corporation. Lightly prized tobacco. Re. 31,739, Cl. 131-111.000.

Brown & Williamson Tobacco Corporation: *See*—
Broughton, James A., Re. 31,739, Cl. 131-111.000.

Coleman Company, Inc., The: *See*—
Hastings, Thomas C., Re. 31,738, Cl. 126-44.000.

Hafner, Otto P. Adjustable die and punch for sheet material fastening machines. Re. 31,737, Cl. 29-432.200.

Hastings, Thomas C., to Coleman Company, Inc., The. Portable single burner campstove. Re. 31,738, Cl. 126-44.000.

Keiper U.S.A., Inc.: *See*—
Strowick, Willibald; and Werner, Paul, Re. 31,741, Cl. 297-367.000.

Matsuki, Yutaka: *See*—
Watanabe, Seizaburo; and Matsuki, Yutaka, Re. 31,744, Cl. 521-95.000.

Randall, John J., Jr.: *See*—
Arora, Mulk R.; and Randall, John J., Jr., Re. 31,743, Cl. 204-129.900.

Spaulding, Tedford H., to Allied Corporation. Unitary hooded electrical contact. Re. 31,742, Cl. 339-258.00R.

Sprague Electric Company: *See*—
Arora, Mulk R.; and Randall, John J., Jr., Re. 31,743, Cl. 204-129.900.

Strowick, Willibald; and Werner, Paul, to Keiper U.S.A., Inc. Inertially locked hinge for motor vehicle seat. Re. 31,741, Cl. 297-367.000.

Watanabe, Seizaburo; and Matsuki, Yutaka, to Asahi-Dow Limited. Expanded olefin polymer. Re. 31,744, Cl. 521-95.000.

Werner, Paul: *See*—
Strowick, Willibald; and Werner, Paul, Re. 31,741, Cl. 297-367.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Black and Decker Manufacturing Company, The: *See*—
Zurwelle, Donald W.; Ramstrom, Lee W.; and Markle, Stanley A., B1 8,243,652, Cl. D8-68.000.

Bram, Stanley, to Institut Pasteur. Device for determining the spatial distribution of radioactivity within an object. B1 4,019,057, 11-20-84, Cl. 250-375.000.

Institut Pasteur: *See*—
Bram, Stanley, B1 4,019,057, Cl. 250-375.000.

Markle, Stanley A.: *See*—
Zurwelle, Donald W.; Ramstrom, Lee W.; and Markle, Stanley A., B1 8,243,652, Cl. D8-68.000.

Morton, Virgil R., to Verco Manufacturing, Inc. Shear load resistant structure. B1 4,186,535, 11-20-84, Cl. 52-250.000.

Ramstrom, Lee W.: *See*—
Zurwelle, Donald W.; Ramstrom, Lee W.; and Markle, Stanley A., B1 8,243,652, Cl. D8-68.000.

Rider, Ronald E., to Xerox Corporation. Position indicator for a display system. B1 3,835,464, 11-20-84, Cl. 340-710.000.

Sanders, Forest E. Knockdown spiral stairway. B1 4,338,751, 11-20-84, Cl. 52-187.000.

Verco Manufacturing, Inc.: *See*—
Morton, Virgil R., B1 4,186,535, Cl. 52-250.000.

Xerox Corporation: *See*—
Rider, Ronald E., B1 3,835,464, Cl. 340-710.000.

Zurwelle, Donald W.; Ramstrom, Lee W.; and Markle, Stanley A., to Black and Decker Manufacturing Company, The. Cordless electric tool. B1 8,243,652, 11-20-84, Cl. D8-68.000.

LIST OF DESIGN PATENTEES

AB Cloetta: *See*—
Andersson, Urban, 276,395, Cl. D6-462.000.

Abe, Takeshi: *See*—
Takayama, Hideki; Abe, Takeshi; Hisa, Tsuneo; Kotsuka, Michiaki; and Hara, Shuichi, 276,433, Cl. D14-113.000.

Aktieselskapet Jotul: *See*—
Heger, Niels-Erik, 276,457, Cl. D23-97.000.

American Home Products Corporation: *See*—
Zabel, Herbert E.; and Lelyk, William, 276,408, Cl. D8-334.000.

Andersson, Kent M. L. Bicycle wheel reflector. 276,418, 11-20-84, Cl. D10-111.000.

Andersson, Urban, to AB Cloetta. Automatic lozenge box dispenser. 276,395, 11-20-84, Cl. D6-462.000.

Arp, Robert A.: *See*—
Scanlan, Dennis R., Jr.; and Arp, Robert A., 276,461, Cl. D24-27.000.

AT&T Bell Laboratories: *See*—
Bartley, Keith D.; Dornbusch, James P.; Genaro, Donald M.; McGarvey, John N.; Sampson, Craig F.; and Zambelli, Michael P., 276,431, Cl. D14-60.000.

Atun, Albert: *See*—
Deluca, Paul V.; Singer, Loren A., Jr.; and Atun, Albert, 276,426, Cl. D13-24.000.

Ban, Jung B.: *See*—
Kim, Bill S.; and Ban, Jung B., 276,448, Cl. D21-5.000.

Bartley, Keith D.; Dornbusch, James P.; Genaro, Donald M.; McGarvey, John N.; Sampson, Craig F.; and Zambelli, Michael P., to AT&T Bell Laboratories. Housing for a desk telephone stand. 276,431, 11-20-84, Cl. D14-60.000.

Battle, David, to Visual Information Institute, Inc. Desk organizer tray. 276,444, 11-20-84, Cl. D19-75.000.

Baum, Alan: *See*—
Duval, Rex F., 276,379, Cl. D2-29.000.

Berardi, Dennis A.; and Scherr, Raymond, to Kramer Music Products, Inc. Guitar head. 276,441, 11-20-84, Cl. D17-20.000.

Bristol-Myers Company: *See*—
Toomey, Michael P., 276,412, Cl. D9-375.000.

Broadway Industries, Inc.: *See*—
Miller, Charles D.; and McKeone, William C., 276,388, Cl. D6-548.000.

Brown, Richard D.; and Christen, Hans D., to Rain Bird Sprinkler Mfg. Corp. Impact drive sprinkler. 276,454, 11-20-84, Cl. D23-7.000.

Burbank, Raymond W.; Gasparaitis, Bernard V.; and Williams, William R., to Motorola, Inc. Electronic circuit enclosure or similar article. 276,428, 11-20-84, Cl. D13-40.000.

Burlington Industries, Inc.: *See*—
Shaw, Earnest D., 276,386, Cl. D6-384.000.

Christen, Hans D.: *See*—
Brown, Richard D.; and Christen, Hans D., 276,454, Cl. D23-7.000.
Clawson, Burrell E.; and Weigl, James. Straight flow manifold. 276,465, 11-20-84, Cl. D24-53.000.
Clawson, Burrell E.: *See*—
Weigl, James; and Clawson, Burrell E., 276,464, Cl. D24-53.000.
Conti, Rino, to Dart Industries Inc. Towel rack or the like. 276,387, 11-20-84, Cl. D6-549.000.
Conti, Rino; Daenen, Robert H. C. M.; Grusin, Gerald M.; Picozza, Augusto A.; and Swett, James B., to Dart Industries Inc. Covered casserole dish or the like. 276,398, 11-20-84, Cl. D7-16.000.
Conti, Rino: *See*—
Daenen, Robert H. C. M.; and Conti, Rino, 276,400, Cl. D7-79.000.
Daenen, Robert H. C. M.; and Conti, Rino, 276,401, Cl. D7-79.000.
Daenen, Robert H. C. M.; and Conti, Rino, 276,402, Cl. D7-79.000.
Daenen, Robert H. C. M.; and Conti, Rino, to Dart Industries Inc. Food storage container or the like. 276,400, 11-20-84, Cl. D7-79.000.
Daenen, Robert H. C. M.; and Conti, Rino, to Dart Industries Inc. Food storage container or the like. 276,401, 11-20-84, Cl. D7-79.000.
Daenen, Robert H. C. M.; and Conti, Rino, to Dart Industries Inc. Food storage container or the like. 276,402, 11-20-84, Cl. D7-79.000.
Daenen, Robert H. C. M.: *See*—
Conti, Rino; Daenen, Robert H. C. M.; Grusin, Gerald M.; Picozza, Augusto A.; and Swett, James B., 276,398, Cl. D7-16.000.
Dalrymple, Connie B. Brush. 276,382, 11-20-84, Cl. D4-119.000.
Dart Industries Inc.: *See*—
Conti, Rino, 276,387, Cl. D6-549.000.
Conti, Rino; Daenen, Robert H. C. M.; Grusin, Gerald M.; Picozza, Augusto A.; and Swett, James B., 276,398, Cl. D7-16.000.
Daenen, Robert H. C. M.; and Conti, Rino, 276,400, Cl. D7-79.000.
Daenen, Robert H. C. M.; and Conti, Rino, 276,401, Cl. D7-79.000.
Daenen, Robert H. C. M.; and Conti, Rino, 276,402, Cl. D7-79.000.
Deluca, Paul V.; Singer, Loren A., Jr.; and Atun, Albert, to Porta Systems Corp. Demarcation telephone protector block. 276,426, 11-20-84, Cl. D13-24.000.
DeVroom, William A., to Rain Bird Consumer Products Corp. Sprinkler head. 276,453, 11-20-84, Cl. D23-6.000.
Di Piazza, Pietro. Battery terminal connector. 276,424, 11-20-84, Cl. D13-10.000.
Doman, Theodore L. Putter head. 276,452, 11-20-84, Cl. D21-218.000.
Dornbusch, James P.: *See*—
Bartley, Keith D.; Dornbusch, James P.; Genaro, Donald M.; McGarvey, John N.; Sampson, Craig F.; and Zambelli, Michael P., 276,431, Cl. D14-60.000.
Doyel, John S. Mixer. 276,404, 11-20-84, Cl. D7-380.000.
Doyle, Jonathon P. Dental floss holder. 276,469, 11-20-84, Cl. D28-64.000.
Drag Specialties, Inc.: *See*—
Preisler, James M.; and Stahel, Alwin J., 276,468, Cl. D26-28.000.
Drive Line Service, Incorporated: *See*—
Wilson, Louis D., 276,437, Cl. D15-140.000.
Duval, Rex F., to Baum, Alan, a part interest. Bifurcated hooded jacket. 276,379, 11-20-84, Cl. D2-29.000.
Ecoffey, Jean-Pierre. Wrist watch. 276,415, 11-20-84, Cl. D10-32.000.
Ejiri Co. Ltd.: *See*—
Ejiri, Morikiyo, 276,403, Cl. D7-360.000.
Ejiri, Morikiyo, to Ejiri Co. Ltd. Pan. 276,403, 11-20-84, Cl. D7-360.000.
Electrak International Limited: *See*—
Humphreys, Michael, 276,425, Cl. D13-12.000.
Escamilla-Kelly, Ricardo. Vertical game board. 276,447, 11-20-84, Cl. D21-20.000.
Excalibur Products, Inc.: *See*—
Orton, Roger W., 276,438, Cl. D15-146.000.
Fails, Earl B.: *See*—
Prater, Ernest W.; and Fails, Earl B., 276,414, Cl. D9-434.000.
Fellhoelter, Leonard H. Tissue box holder. 276,389, 11-20-84, Cl. D6-552.000.
Fenne, Kenneth R., to Pittway Corporation. Smoke detector. 276,417, 11-20-84, Cl. D10-106.000.
Foyle, John W. Desk. 276,393, 11-20-84, Cl. D6-483.000.
Foyle, John W. Desk. 276,394, 11-20-84, Cl. D6-483.000.
Fujii, Yuzo: *See*—
Mori, Daisaku; Fujii, Yuzo; and Kanda, Sayoko, 276,458, Cl. D23-123.000.
Gasparaitis, Bernard V.: *See*—
Burbank, Raymond W.; Gasparaitis, Bernard V.; and Williams, William R., 276,428, Cl. D13-40.000.
Gemmill, Roderique S., to Radiation Concepts, Inc. X-ray film frame. 276,460, 11-20-84, Cl. D24-2.000.
Genaro, Donald M.: *See*—
Bartley, Keith D.; Dornbusch, James P.; Genaro, Donald M.; McGarvey, John N.; Sampson, Craig F.; and Zambelli, Michael P., 276,431, Cl. D14-60.000.
Giovagnoli, Paul S., to Master Pitching Machine, Inc. Batting cage. 276,466, 11-20-84, Cl. D25-1.000.
Giroflex Entwicklungs AG: *See*—
Locher, Hermann, 276,396, Cl. D6-498.000.
Godbersen, Byron L. Boat trailer. 276,420, 11-20-84, Cl. D12-101.000.
Gordon, John B. In-line fuse holder. 276,427, 11-20-84, Cl. D13-35.000.
Goshi Kaisha Kanemitsu Doko Yosetsu-Sho: *See*—
Kanemitsu, Yukio, 276,409, Cl. D8-360.000.
Great Neck Saw Manufacturers, Inc.: *See*—
Jacoff, Daniel, 276,407, Cl. D8-96.000.
Grusin, Gerald M.: *See*—
Conti, Rino; Daenen, Robert H. C. M.; Grusin, Gerald M.; Picozza, Augusto A.; and Swett, James B., 276,398, Cl. D7-16.000.
Hamm, John E., to Zimmer, Inc. Acetabular cup. 276,463, 11-20-84, Cl. D24-33.000.
Hara, Shuichi: *See*—
Takayama, Hideki; Abe, Takeshi; Hisa, Tsuneo; Kotsuka, Michiaki; and Hara, Shuichi, 276,433, Cl. D14-113.000.
Harrison/Faultless Systems, Inc.: *See*—
Harrison, Frank, 276,472, Cl. D32-1.000.
Harrison, Frank, to Harrison/Faultless Systems, Inc. Steam cleaning machine. 276,472, 11-20-84, Cl. D32-1.000.
Heger, Niels-Erik, to Aktieselskapet Jotul. Solid fuel stove. 276,457, 11-20-84, Cl. D23-97.000.
Hellberg, Goran, to Hellberg Protection Aktiebolag. Visor frame for a protective helmet. 276,380, 11-20-84, Cl. D2-233.000.
Hellberg Protection Aktiebolag: *See*—
Hellberg, Goran, 276,380, Cl. D2-233.000.
Hillstrom, David U., to Marketing Displays, Inc. Illuminated sign with clock. 276,445, 11-20-84, Cl. D20-20.000.
Hisa, Tsuneo: *See*—
Takayama, Hideki; Abe, Takeshi; Hisa, Tsuneo; Kotsuka, Michiaki; and Hara, Shuichi, 276,433, Cl. D14-113.000.
Hitachi, Ltd.: *See*—
Takayama, Hideki; Abe, Takeshi; Hisa, Tsuneo; Kotsuka, Michiaki; and Hara, Shuichi, 276,433, Cl. D14-113.000.
Holland, Claude V. Coin counter. 276,442, 11-20-84, Cl. D18-3.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Mizuno, Tetsuya; Takahashi, Shinichi; and Kurosu, Yukio, 276,419, Cl. D12-91.000.
Hopkins, John C. Combined key holder and defensive weapon. 276,383, 11-20-84, Cl. D3-62.000.
Horikoshi, Tatsuo, to Yamaha Hatsudoki Kabushiki Kaisha. Wheel for a motorcycle. 276,423, 11-20-84, Cl. D12-211.000.
Humphreys, Michael, to Electrak International Limited. Continuous electrical track system. 276,425, 11-20-84, Cl. D13-12.000.
Ikenberry, Maynard D. Hydraulic powered combined pipe and tubing straightener. 276,436, 11-20-84, Cl. D15-122.000.
International Harvester Co.: *See*—
Montgomery, Gregg C., 276,422, Cl. D12-192.000.
Isaacs, Robert B., to Northern Telecom Limited. Base for a telecommunications set. 276,430, 11-20-84, Cl. D14-60.000.
Ishikawa, Yuji: *See*—
Matsuzaka, Yohzoh; Yasutani, Shigeki; Ishikawa, Yuji; Matsumoto, Hiroshi; and Nakamine, Chosin, 276,440, Cl. D16-32.000.
Jackson, Milan D., to U-Dig-It Enterprises, Inc. Foldable digging tool. 276,405, 11-20-84, Cl. D8-10.000.
Jacoff, Daniel, to Great Neck Saw Manufacturers, Inc. Hack saw frame. 276,407, 11-20-84, Cl. D8-96.000.
Johnson, Marshall B.; Moore, Joseph F.; and Myerly, Robert S., to Wear-Ever Aluminum, Inc. Hand held can opener. 276,406, 11-20-84, Cl. D8-41.000.
Jotko Enterprises, Inc.: *See*—
Nagle, Joseph J.; and Vitko, Joseph, Jr., 276,381, Cl. D3-30.100.
Kanda, Sayoko: *See*—
Mori, Daisaku; Fujii, Yuzo; and Kanda, Sayoko, 276,458, Cl. D23-123.000.
Kanemitsu, Yukio, to Goshi Kaisha Kanemitsu Doko Yosetsu-Sho. Poly-V pulley. 276,409, 11-20-84, Cl. D8-360.000.
Karlsson, Svante, to Pido Inredningar Handelsbolac Matty Och Svante Karlsson. Display rack. 276,390, 11-20-84, Cl. D6-553.000.
Kiddie Products, Inc.: *See*—
Panicci, Richard L., 276,450, Cl. D21-65.000.
Panicci, Richard L., 276,451, Cl. D21-65.000.
Kim, Bill S.; and Ban, Jung B. Tossing game base. 276,448, 11-20-84, Cl. D21-5.000.
Knoll International, Inc.: *See*—
Stephens, William I., 276,385, Cl. D6-366.000.
Kotsuka, Michiaki: *See*—
Takayama, Hideki; Abe, Takeshi; Hisa, Tsuneo; Kotsuka, Michiaki; and Hara, Shuichi, 276,433, Cl. D14-113.000.
Kramer Music Products, Inc.: *See*—
Berardi, Dennis A.; and Scherr, Raymond, 276,441, Cl. D17-20.000.
Kroll, Frederick H. Inflatable baby bed. 276,384, 11-20-84, Cl. D6-390.000.
Kurosu, Yukio: *See*—
Mizuno, Tetsuya; Takahashi, Shinichi; and Kurosu, Yukio, 276,419, Cl. D12-91.000.
LaFrance Corporation: *See*—
Peroni, Peter A., 276,411, Cl. D8-399.000.
Laney, Roy N. Portable oil well walking beam pump jack. 276,434, 11-20-84, Cl. D15-7.000.
LaPolice, George, to Singer Company, The. Sewing machine or similar article. 276,435, 11-20-84, Cl. D15-69.000.
Lelyk, William: *See*—
Zabel, Herbert E.; and Lelyk, William, 276,408, Cl. D8-334.000.
Lo, Eddie Y. H. Vanity mirror. 276,470, 11-20-84, Cl. D28-64.300.
Lo, Eddie Y. H. Combined lipstick holder and illuminable mirror. 276,471, 11-20-84, Cl. D28-64.300.
Locher, Hermann, to Giroflex Entwicklungs AG. Furniture base or similar article. 276,396, 11-20-84, Cl. D6-498.000.
Marketing Displays, Inc.: *See*—
Hillstrom, David U., 276,445, Cl. D20-20.000.
Master Pitching Machine, Inc.: *See*—
Giovagnoli, Paul S., 276,466, Cl. D25-1.000.

Matsumoto, Hiroshi: *See*—
Matsuzaka, Yohzoh; Yasutani, Shigeki; Ishikawa, Yuji; Matsumoto, Hiroshi; and Nakamine, Chosin, 276,440, Cl. D16-32.000.
Matsushita Electric Industrial Co., Ltd.: *See*—
Mori, Daisaku; Fujii, Yuzo; and Kanda, Sayoko, 276,458, Cl. D23-123.000.
Matsuzaka, Yohzoh; Yasutani, Shigeki; Ishikawa, Yuji; Matsumoto, Hiroshi; and Nakamine, Chosin, to Tokyo Shibaura Denki Kabushiki Kaisha. Display panel for copying machines. 276,440, 11-20-84, Cl. D16-32.000.
Matta, Leonard J.: *See*—
Morrion, Gary D.; and Matta, Leonard J., 276,449, Cl. D21-6.000.
McGarvey, John N.: *See*—
Bartley, Keith D.; Dornbusch, James P.; Genaro, Donald M.; McGarvey, John N.; Sampson, Craig F.; and Zambelli, Michael P., 276,431, Cl. D14-60.000.
McKeone, William C.: *See*—
Miller, Charles D.; and McKeone, William C., 276,388, Cl. D6-548.000.
Miller, Charles D.; and McKeone, William C., to Broadway Industries, Inc. Towel rack. 276,388, 11-20-84, Cl. D6-548.000.
Mizuno, Tetsuya; Takahashi, Shinichi; and Kurosu, Yukio, to Honda Giken Kogyo Kabushiki Kaisha. Passenger car. 276,419, 11-20-84, Cl. D12-91.000.
Montgomery, Gregg C., to International Harvester Co. Vehicle instrument display panel. 276,422, 11-20-84, Cl. D12-192.000.
Moore, Joseph F.: *See*—
Johnson, Marshall B.; Moore, Joseph F.; and Myerly, Robert S., 276,406, Cl. D8-41.000.
Mori, Daisaku; Fujii, Yuzo; and Kanda, Sayoko, to Matsushita Electric Industrial Co., Ltd. Oil heater. 276,458, 11-20-84, Cl. D23-123.000.
Morrion, Gary D.; and Matta, Leonard J. Combined dartboard and stand. 276,449, 11-20-84, Cl. D21-6.000.
Motorola, Inc.: *See*—
Burbank, Raymond W.; Gasparaitis, Bernard V.; and Williams, William R., 276,428, Cl. D13-40.000.
Mox, Dana W., to Tricolor Corporation. Electronic timer. 276,416, 11-20-84, Cl. D10-40.000.
Myerly, Robert S.: *See*—
Johnson, Marshall B.; Moore, Joseph F.; and Myerly, Robert S., 276,406, Cl. D8-41.000.
Nagle, Joseph J.; and Vitko, Joseph, Jr., to Jotko Enterprises, Inc. Combined case and rack for a circuit board or the like. 276,381, 11-20-84, Cl. D3-30.100.
Nakamine, Chosin: *See*—
Matsuzaka, Yohzoh; Yasutani, Shigeki; Ishikawa, Yuji; Matsumoto, Hiroshi; and Nakamine, Chosin, 276,440, Cl. D16-32.000.
Northern Telecom Inc.: *See*—
Pridgen, Evans H., 276,429, Cl. D6-468.000.
Northern Telecom Limited: *See*—
Isaacs, Robert B., 276,430, Cl. D14-60.000.
Ogawa, Shinri; and Yamano, Takuya, to Sanyo Electric Co., Ltd. Spray steam iron. 276,473, 11-20-84, Cl. D32-70.000.
Orton, Roger W., to Excalibur Products, Inc. Vacuum packing unit. 276,438, 11-20-84, Cl. D15-146.000.
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Palka, James J., 276,392, Cl. D6-561.000.
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Picozza, Augusto A.: *See*—
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Karlsson, Svante, 276,390, Cl. D6-553.000.
Pittway Corporation: *See*—
Fenne, Kenneth R., 276,417, Cl. D10-106.000.
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Deluca, Paul V.; Singer, Loren A., Jr.; and Atun, Albert, 276,426, Cl. D13-24.000.
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Raymond, Gary E. Cassette for photographic roll materials. 276,439, 11-20-84, Cl. D16-32.000.
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Ringler, Mary A. Necktie rack. 276,391, 11-20-84, Cl. D6-320.000.
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Bartley, Keith D.; Dornbusch, James P.; Genaro, Donald M.; McGarvey, John N.; Sampson, Craig F.; and Zambelli, Michael P., 276,431, Cl. D14-60.000.
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Shaw, Mark L., to Specific Cruise Systems, Inc. Automobile turn signal lever with toggle switches. 276,421, 11-20-84, Cl. D12-174.000.
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Sperti, John. Music scale. 276,443, 11-20-84, Cl. D19-64.000.
Stahel, Alwin J.: *See*—
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Stephens, William I., to Knoll International, Inc. Chair. 276,385, 11-20-84, Cl. D6-366.000.
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Takahashi, Shinichi: *See*—
Mizuno, Tetsuya; Takahashi, Shinichi; and Kurosu, Yukio, 276,419, Cl. D12-91.000.
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Whitford, Kelvin G., 276,446, Cl. D20-42.000.
Tricolor Corporation: *See*—
Mox, Dana W., 276,416, Cl. D10-40.000.
U-Dig-It Enterprises, Inc.: *See*—
Jackson, Milan D., 276,405, Cl. D8-10.000.
Unger, Steve A., to Syracuse China Corporation. Upper surface decoration for a plate or similar article. 276,399, 11-20-84, Cl. D7-39.000.
Villarreal, Isamari. Surgical instrument tray. 276,462, 11-20-84, Cl. D24-31.000.
Visual Information Institute, Inc.: *See*—
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Weigl, James; and Clawson, Burrell E. Respiratory gas flow manifold. 276,464, 11-20-84, Cl. D24-53.000.
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Matsuzaka, Yohzoh; Yasutani, Shigeki; Ishikawa, Yuji; Matsumoto, Hiroshi; and Nakamine, Chosin, 276,440, Cl. D16-32.000.
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Hamm, John E., 276,463, Cl. D24-33.000.

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Billeaud, Hugh J., III. Distinct clone of the species *Trachelospermum asiaticum* characterized as novel by its dwarf size. 5,346, 11-20-84, Cl. 54.000.

Duffett, William E., to Yoder Brothers, Inc. Chrysanthemum plant named True Luv. 5,350, 11-20-84, Cl. 76.000.

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Jackson & Perkins Company: *See*—
Warriner, William A., 5,340, Cl. 11.000.
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Kaiser, Herbert, to Oglevee Associates, Inc. Distinct variety of streptocarpus named Adonis. 5,349, 11-20-84, Cl. 68.000.

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Palombi, Emidio: *See*—
Spada, Aldo; and Palombi, Emidio, 5,344, Cl. 43.000.

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Duffett, William E., 5,350, Cl. 76.000.
Duffett, William E., 5,351, Cl. 78.000.
Duffett, William E., 5,352, Cl. 78.000.
Duffett, William E., 5,353, Cl. 78.000.
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CLASSIFICATION OF PATENTS

ISSUED NOVEMBER 20, 1984

NOTE.—First number, class; second number, subclass; third number, patent number

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2.1 R	4,483,019
2.5	4,483,020
7	4,483,021
19	4,483,022

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453	4,483,029
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254	4,483,058
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432.2	Re.31,737
523	4,483,061
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286	4,483,080
438	4,483,081

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321	4,483,140
517	4,483,141
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273	4,483,702
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086	4,483,705

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351	4,483,173
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412	4,483,176

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155	4,483,189
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187	4,483,191
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360	4,483,210
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572	4,483,214
688	4,483,212
759	4,483,215
798	4,483,216

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129	4,483,710

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CLASS 82

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678	4,483,228

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488	4,483,244

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88	4,483,247
99	4,483,248

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CLASS 109

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417	4,483,294
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12 B	4,483,722
31.5	4,483,723
31.55	4,483,724
175	4,483,725
187	4,483,726

CLASS 150

52 R	4,483,380

CLASS 152

155	4,483,381
362 R	4,483,382

CLASS 156

181	4,483,727
209	4,483,728
222	4,483,729
242	4,483,730

245 4,483,731
247 4,483,732
341 4,483,733
605 4,483,734
607 4,483,735
616 A 4,483,736
643 4,483,737
653 4,483,738
656 4,483,739

CLASS 159

47.3 4,483,740

CLASS 162

5 4,483,741
4,483,742
100 4,483,743
180 4,483,744
205 4,483,745

CLASS 164

37 4,483,383
154 4,483,384
416 4,483,385
455 4,483,387
483 4,483,386

CLASS 165

2 4,483,388
80 B 4,483,389
104.32 4,483,390
134 DP 4,483,391
150 4,483,392

CLASS 166

65 R 4,483,393
113 4,483,394
241 4,483,395
242 4,483,396
250 4,483,397
259 4,483,398
308 4,483,399

CLASS 172

42 4,483,400
574 4,483,401

CLASS 173

134 4,483,402

CLASS 174

9 R 4,484,019
53 4,484,021
68 C 4,484,020
84 R 4,484,022
102 R 4,484,023
121 R 4,484,024

CLASS 175

88 4,483,403

CLASS 177

255 4,483,404

CLASS 178

18 4,484,026
22.09 4,484,025
22.13 4,484,027

CLASS 179

2 DP 4,484,028
2 EA 4,484,029
8 A 4,484,030
18 BE 4,484,031
18 FA 4,484,032
81 B 4,484,034
84 A 4,484,036
84 VF 4,484,035
115.5 PV 4,484,037
146 R 4,484,033

CLASS 180

6.5 4,483,405
9.5 4,483,406
4,483,407
70.1 4,483,408
89.15 4,483,409
281 4,483,410

CLASS 181

120 4,483,411
204 4,483,412
224 4,483,413
242 4,483,414

CLASS 182

22 4,483,415
107 4,483,416

CLASS 184

55.2 4,483,417

CLASS 187

29 R 4,483,418
4,483,419
31 4,483,420

CLASS 188

16 4,483,421
71.5 4,483,422
134 4,483,423
196 BA 4,483,424
378 4,483,425
4,483,426

CLASS 190

11 4,483,427

CLASS 192

0.07 4,483,428
18 R 4,483,429
91 A 4,483,430

CLASS 194

97 A 4,483,431

CLASS 198

333 4,483,432
339 4,483,433
394 4,483,434
399 4,483,435
648 4,483,436

CLASS 200

5 A 4,484,038
4,484,039
38 R 4,484,040
61.45 M 4,484,041
67 DB 4,484,042
85 R 4,484,043
144 B 4,484,044
4,484,046
144 R 4,484,045
148 F 4,484,047

CLASS 203

91 4,483,746
92 4,483,747

CLASS 204

1 T 4,483,748
15 4,483,749
29 4,483,750
37.1 4,483,751
64 T 4,483,752
70 4,483,753
98 4,483,754
129.1 4,483,755
129.9 Re.31,743
155 4,483,756
158 R 4,483,757
159.14 4,483,758
159.24 4,483,759

CLASS 206

63.3 4,483,437
83.5 4,483,438
219 4,483,439
233 4,483,440
328 4,483,441
334 4,483,442
459 4,483,443
594 4,483,444
621 4,483,445

CLASS 208

60 4,483,760
106 4,483,761
108 4,483,762
111 4,483,764
120 4,483,765
134 4,483,766
138 4,483,767
254 H 4,483,763

CLASS 209

18 4,483,768

CLASS 210

282 4,483,769
401 4,483,770
490 4,483,771
601 4,483,772
656 4,483,773
788 4,483,774

CLASS 211

153 4,483,446

CLASS 212

188 4,483,447
189 4,483,448

CLASS 215

250 4,483,449
254 4,483,450
296 4,483,451

CLASS 219

10.43 4,484,048
10.51 4,484,049
10.55 B 4,484,050
69 C 4,484,051
69 E 4,484,053
69 M 4,484,052
85 M 4,484,054
86.21 4,484,055
86.51 4,484,056
109 4,484,057
121 EJ 4,484,058
130.01 4,484,059
137 R 4,484,060
301 4,484,061
309 4,484,062
400 4,484,063
4,484,064
492 4,484,065

CLASS 220

2.1 A 4,483,452
3.5 4,483,453
5 A 4,483,454
23.83 4,483,455
67 4,483,456
232 4,483,457
320 4,483,458

CLASS 221

14 4,483,459
303 4,483,460

CLASS 222

3 4,483,461
63 4,483,462
64 4,483,463
83 4,483,464
83.5 4,483,465
647 4,483,466

CLASS 223

74 4,483,467

CLASS 224

42.06 4,483,468
151 4,483,469
257 4,483,470
314 4,483,471

CLASS 226

16 4,483,472

CLASS 227

8 4,483,473
4,483,474
147 4,483,475

CLASS 228

4.1 4,483,476
42 4,483,477
157 4,483,478

CLASS 235

98 C 4,484,066
380 4,484,067
462 4,484,068

CLASS 237

8 R 4,483,479

CLASS 239

73 4,483,480
119 4,483,481
434 4,483,482
526 4,483,483
585 4,483,484
4,483,485
663 4,483,486

CLASS 241

23 4,483,488
121 4,483,487

CLASS 242

2 4,483,489
25 R 4,483,490
55.2 4,483,491
57 4,483,492
66 4,483,493
107 4,483,494
107.4 A 4,483,495
158 R 4,483,496

CLASS 244

15 4,483,497
75 R 4,483,498
118.1 4,483,499

CLASS 248

58 4,483,500
205.1 4,483,501
222.1 4,483,502
349 4,483,503
429 4,483,504
447 4,483,505
545 4,483,506

CLASS 250

201 4,484,069
223 R 4,484,070
237 G 4,484,071
4,484,072
327.2 4,484,073
336.1 4,484,074
342 4,484,075
370 4,484,076
375 B1 4,019,057
492.2 4,484,077
505.1 4,484,078
548 4,484,079
560 4,484,080
563 4,484,081

CLASS 251

58 4,483,507
61.3 4,483,508
86 4,483,509
149.6 4,483,510
174 4,483,511
265 4,483,512
308 4,483,513
327 4,483,514

CLASS 252

32.7 E 4,483,775
40 4,483,776
49.5 4,483,777
94 4,483,778
135 4,483,779
4,483,780
174.12 4,483,781
174.17 4,483,782
312 4,483,783
520 4,483,785
522 R 4,483,786
551 4,483,787
578 4,483,788
628 4,483,789
633 4,483,790

CLASS 254

103 4,483,515
199 4,483,516
254 4,483,517
274 4,483,518
350 4,483,519

CLASS 260

97.7 4,483,791
112.5 R 4,483,793
4,483,794
112.7 4,483,792
239 A 4,483,797
4,483,798
456 R 4,483,799
465 F 4,483,800
505 C 4,483,801
4,483,802
546 4,483,803
4,483,804

CLASS 261

78 A 4,483,805

CLASS 264

0.5 4,483,806
22 4,483,807
4,483,808
53 4,483,809
60 4,483,810
162 4,483,811
171 4,483,812
225 4,483,813
230 4,483,814
566 4,483,815

CLASS 266

220 4,483,520

CLASS 267

8 R 4,483,521

CLASS 269

48.1 4,483,522
60 4,483,523
139 4,483,524
295 4,483,525

CLASS 270

54 4,483,526

CLASS 271

5 4,483,527
9 4,483,528
131 4,483,529
236 4,483,530

CLASS 272

65 4,483,531
96 4,483,532
137 4,483,533

CLASS 273

1.5 R 4,483,534
153 S 4,483,535
183 E 4,483,536
220 4,483,537
270 4,483,538

CLASS 277

1 4,483,539
2 4,483,540
3 4,483,541
31 4,483,542
188 R 4,483,543
207 A 4,483,544
211 4,483,545

CLASS 280

6 R 4,483,546
91 4,483,547
289 WC 4,483,548
402 4,483,549
515 4,483,550
605 4,483,551
690 4,483,552
803 4,483,553

CLASS 285

45 4,483,554
169 4,483,555
252 4,483,556

CLASS 290

1 R 4,484,082
45 4,484,083

CLASS 292

218 4,483,557
339 4,483,558

CLASS 293

126 4,483,559

CLASS 294

1 B 4,483,560
15 4,483,561
19 R 4,483,562
90 4,483,563
91 4,483,564

CLASS 297

367 Re.31,741
410 4,483,565

CLASS 299

37 4,483,566
43 4,483,567
53 4,483,568

CLASS 307

64 4,484,084
106 4,484,085
112 4,484,086
272 A 4,484,087
279 4,484,088
297 4,484,089
419 4,484,090
471 4,484,091
578 4,484,092

CLASS 308

2 R 4,483,569
10 4,483,570

CLASS 310

14 4,484,093
43 4,484,094
49 R 4,484,095
260 4,484,096
268 4,484,097
313 A 4,484,098
317 4,484,099
323 4,483,571

CLASS 312

196 4,483,572
281 4,483,573

CLASS 313

44 4,484,100
142 4,484,101
417 4,484,102
422 4,484,103

CLASS 315

86 4,484,104
133 4,484,105
150 4,484,106
176 4,484,107
219 4,484,108
290 4,484,109
364 4,484,110
397 4,484,111
399 4,484,112
408 4,484,113

CLASS 318

138 4,484,114
254 4,484,115
325 4,484,116
338 4,484,117
561 4,484,118
563 4,484,119
568 4,484,120
640 4,484,121
663 4,484,122
696 4,484,123
4,484,124
768 4,484,125
800 4,484,126
802 4,484,127
805 4,484,128
807 4,484,129

CLASS 320

40 4,484,130

CLASS 324

52 4,484,131
54 4,484,132
58.5 A 4,484,133
71.1 4,484,134
4,484,135
158 R 4,484,136
166 4,484,137
307 4,484,138
366 4,484,139
434 4,484,140
464 4,484,141

CLASS 328

155 4,484,142

CLASS 329

50 4,484,143

CLASS 330

4.3 4,484,144
9 4,484,145
69 4,484,146
156 4,484,147
253 4,484,148
291 4,484,149
297 4,484,150
4,484,151

CLASS 331

1 A 4,484,152
10 4,484,153
23 4,484,154
49 4,484,155
60 4,484,156
116 R 4,484,157

CLASS 333

182 4,484,159
191 4,484,158
195 4,484,160
202 4,484,161
219 4,484,162
247 4,484,163

CLASS 335

16 4,484,164
165 4,484,165
213 4,484,166
260 4,484,167
274 4,484,168

CLASS 336

57 4,484,169
65 4,484,170
84 R 4,484,171

CLASS 338

35 4,484,172
42 4,484,173

CLASS 339

5 L 4,483,574
14 P 4,483,575
17 F 4,483,576
38 4,483,577
75 MP 4,483,578
90 R 4,483,579
103 M 4,483,580
176 MP 4,483,581
258 R Re.31,742

CLASS 340

84 4,484,175
347 DA 4,484,178
347 DD 4,484,176
347 NT 4,484,177
365 P 4,484,179
365 S 4,484,180
521 4,484,181
552 4,484,182
568 4,484,183
572 4,484,184
656 4,484,185
689 4,484,186
703 4,484,187
710 B1 3,835,464
723 4,484,189
728 4,484,188
825.57 4,484,190
965 4,484,191
995 4,484,192

CLASS 343

5 SA 4,484,193
17.7 4,484,194
18 B 4,484,195
404 4,484,196
781 P 4,484,197
880 4,484,198

CLASS 346

1.1 4,484,199
76 PH 4,484,200

139 C 4,484,201
140 R 4,484,202
160 4,484,203
200 4,484,204
4,484,205

CLASS 350

96.15 4,483,582
4,483,583
96.21 4,483,584
96.24 4,483,585
97 4,483,586
174 4,483,587
247 4,483,588
254 4,483,589
273 4,483,590
320 4,483,591
342 4,483,592
349 4,483,593
4,483,594
350 R 4,483,595
385 4,483,596
454 4,483,597
558 4,483,598

CLASS 352

22 4,483,599

CLASS 353

118 4,483,600

CLASS 354

288 4,483,601
402 4,483,602
4,483,603
4,483,604
417 4,483,605

CLASS 355

3 DD 4,483,606
3 TR 4,483,607
8 4,483,608
11 4,483,609
15 4,483,610
4,483,611
76 4,483,612

CLASS 356

1 4,483,613
28.5 4,483,614
237 4,483,615
246 4,483,616
350 4,483,617
400 4,483,618
434 4,483,619

CLASS 357

13 4,484,206
16 4,484,207
22 4,484,208
23 4,484,209
24 4,484,210
50 4,484,211
51 4,484,212
4,484,213
52 4,484,214
80 4,484,215

CLASS 358

39 4,484,216
84 4,484,217
86 4,484,218
90 4,484,219
190 4,484,220
191.1 4,484,221
196 4,484,222
213 4,484,223
4,484,224
227 4,484,225
242 4,484,226
4,484,227
243 4,484,228
4,484,229
284 4,484,230
296 4,484,231
299 4,484,232
302 4,484,233
340 4,484,174
4,484,234

CLASS 360

10.2 4,484,235
10.3 4,484,236
25 4,484,237
47 4,484,238
92 4,484,239
96.5 4,484,240
105 4,484,241
130.21 4,484,242
132 4,484,248

CLASS 361

50 4,484,243
56 4,484,244
68 4,484,245
71 4,484,246
128 4,484,247
216 4,484,249
220 4,484,250
321 4,484,251
433 4,484,252

CLASS 362

206 4,484,253
309 4,484,254
396 4,484,255

CLASS 363

26 4,484,256
124 4,484,257

CLASS 364

141 4,484,258
200 4,484,261
4,484,262
4,484,263
4,484,264
4,484,265
4,484,266
4,484,267
4,484,268
4,484,269
4,484,270
405 4,484,271
422 4,484,272
426 4,484,273
4,484,274
4,484,275
4,484,276
4,484,277
4,484,278
4,484,279
4,484,280
4,484,281
4,484,282
434 4,484,283
449 4,484,284
472 4,484,285
474 4,484,286
4,484,287
478 4,484,288
4,484,289
483 4,484,290
484 4,484,291
491 4,484,292
513 4,484,293
4,484,294
607 4,484,295
4,484,296
716 4,484,260
717 4,484,297
720 4,484,298
724 4,484,299
754 4,484,259
755 4,484,300
760 4,484,301
900 4,484,302
4,484,303
4,484,304
4,484,305
4,484,306
4,484,307
4,484,308

CLASS 365

1 4,484,309
174 4,484,310
190 4,484,311
233 4,484,312

CLASS 366

7 4,483,620
111 4,483,621
129 4,483,622
247 4,483,623
293 4,483,624
297 4,483,625

CLASS 367

27 4,484,313
58 4,484,314
139 4,484,315
4,484,316
150 4,484,317

CLASS 368

10 4,483,626
76 4,483,627
82 4,483,628

CLASS 369

41 4,484,318
46 4,484,319
132 4,484,320
270 4,484,321

CLASS 370

32 4,484,322
58 4,484,323
4,484,324
60 4,484,325
4,484,326
84 4,484,327
85 4,484,328

CLASS 371

25 4,484,329
36 4,484,330

CLASS 372

38 4,484,331
50 4,484,332
64 4,484,333
101 4,484,334

CLASS 374

57 4,483,629
119 4,483,630
141 4,483,631
182 4,483,632

CLASS 375

1 4,484,335
4 4,484,336
81 4,484,337
94 4,484,338

CLASS 376

158 4,483,816
159 4,483,817
435 4,483,818

CLASS 378

69 4,484,341
82 4,484,339
019 4,484,340
168 4,484,342
196 4,484,343

CLASS 381

46 4,484,344
98 4,484,345

CLASS 382

27 4,484,346
47 4,484,347
48 4,484,348
49 4,484,349

CLASS 383

4 4,484,350
9 4,484,351
65 4,484,352

CLASS 400

82 4,483,633
489 4,483,634
642 4,483,635

CLASS 401

266 4,483,636

CLASS 402

15 4,483,637

CLASS 403

20 4,483,638
317 4,483,639

CLASS 405

15 4,483,640
129 4,483,641
132 4,483,642
154 4,483,643
201 4,483,644
261 4,483,645

CLASS 406

14 4,483,646

CLASS 408

82 4,483,647

CLASS 411

10 4,483,648
41 4,483,649

CLASS 414

21 4,483,650
217 4,483,651
392 4,483,652
541 4,483,653
744 R 4,483,654
786 4,483,655

CLASS 415

53 T 4,483,656

CLASS 416

51 4,483,657
130 4,483,658
200 R 4,483,659
213 A 4,483,660
220 R 4,483,661

CLASS 417

53 4,483,662
222 4,483,663
234 4,483,664
401 4,483,665

CLASS 418

45 4,483,666
84 4,483,667

CLASS 419

2 4,483,819
28 4,483,820

CLASS 420

437 4,483,821
456 4,483,822

CLASS 422

63 4,483,823
92 4,483,824
100 4,483,825
225 4,483,826

CLASS 423

28 4,483,827
49 4,483,828
55 4,483,829
118 4,483,830
175 4,483,831
210 4,483,832
228 4,483,833
4,483,834
277 4,483,835
290 4,483,836
309 4,483,837
321 R 4,483,838
344 4,483,839
445 4,483,840
456 4,483,841
474 4,483,842
573 R 4,483,843
574 R 4,483,844
617 4,483,845

CLASS 424

19 4,483,846
22 4,483,847
49 4,483,848
85 4,483,849
177 4,483,850
180 4,483,851
195 4,483,852
211 4,483,853
230 4,483,854
246 4,483,855
4,483,856
249 4,483,857
250 4,483,858
4,483,859
260 4,483,860
263 4,483,861
269 4,483,862
4,483,863
270 4,483,864
273 R 4,483,865
4,483,866
279 4,483,867
282 4,483,868
301 4,483,869
309 4,483,870
312 4,483,871
321 4,483,872
331 4,483,873

CLASS 425

81.1 4,483,668
131.1 4,483,669
324.1 4,483,670
435 4,483,671

CLASS 426

44 4,483,874
52 4,483,875
4,483,876
54 4,483,877
393 4,483,878
451 4,483,879
549 4,483,880
600 4,483,881

CLASS 427

2 4,483,882
39 4,483,883
54.1 4,483,884
58 4,483,885
213 4,483,886
336 4,483,888
389.9 4,483,889
436 4,483,887

CLASS 428

7 4,483,890
35 4,483,891
36 4,483,892
90 4,483,893
95 4,483,894
198 4,483,895
200 4,483,896
213 4,483,899
262 4,483,900
288 4,483,897
315.5 4,483,901
330 4,483,902
356 4,483,898
373 4,483,903
543 4,483,904
570 4,483,905
607 4,483,906
629 4,483,907

CLASS 429

8 4,483,908
94 4,483,909
179 4,483,910

CLASS 430

65 4,483,911
138 4,483,912
160 4,483,913
203 4,483,914
223 4,483,915
236 4,483,916
329 4,483,917
372 4,483,918
566 4,483,919

CLASS 431

20 4,483,672
328 4,483,673

CLASS 433

22 4,483,674
141 4,483,675
142 4,483,676
170 4,483,677
201 4,483,678
228 4,483,679

CLASS 434

154 4,483,680
236 4,483,681

CLASS 435

6 4,483,920
7 4,483,921
184 4,483,922
253 4,483,923
288 4,483,924
293 4,483,925

CLASS 436

16 4,483,926
43 4,483,927
519 4,483,928
533 4,483,929

CLASS 440

53 4,483,682

CLASS 441

69 4,483,683

CLASS 446

207 4,483,097
430 4,483,096

CLASS 455

33 4,484,353
35 4,484,354
76 4,484,355
165 4,484,356
166 4,484,357
213 4,484,358

CLASS 464

68 4,483,684
83 4,483,685

CLASS 474

11 4,483,686
28 4,483,687

CLASS 501

36 4,483,930
41 4,483,931
117 4,483,932
138 4,483,933
147 4,483,934
151 4,483,935

CLASS 502

73 4,483,937
74 4,483,936
113 4,483,938
127 4,483,939
159 4,483,940
171 4,483,941
255 4,483,942
342 4,483,943
439 4,483,944

CLASS 521

62 4,483,945
95 Re.31,744

CLASS 523

145 4,483,946
156 4,483,947
203 4,483,784
205 4,483,948
514 4,483,949

CLASS 524

48 4,483,950
82 4,483,951
108 4,483,952
119 4,483,953
261 4,483,954
293 4,483,955
384 4,483,956
390 4,483,957
409 4,483,958
457 4,483,959
499 4,483,960
542 4,483,961
552 4,483,962

CLASS 525

44 4,483,963
54.11 4,483,964
322 4,483,965
323 4,483,966
370 4,483,967
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263 4,483,987
384 4,483,988

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149 4,483,990
189 4,483,991
302 4,483,992
345 4,483,993

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529 4,483,997
533 4,483,998

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75 4,484,000
160 4,484,001
232 4,484,002

CLASS 562

574 4,484,003

CLASS 564

384 4,484,004

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350 4,484,005
454 4,484,006
628 4,484,007
639 4,484,008
678 4,484,009
732 4,484,010
781 4,484,011
863 4,484,012
899 4,484,013

CLASS 585

255 4,484,014
262 4,484,015
415 4,484,017
510 4,484,016

CLASS 604

265 4,483,688

CLASSIFICATION OF DESIGNS

D2—	29	276,379		549	276,387		380	276,410		24	276,426	D19—	64	276,443		137	276,459
	233	276,380		552	276,389		399	276,411		35	276,427		75	276,444	D24—	2	276,460
D3—	30.1	276,381		553	276,390	D9—	375	276,412		40	276,428	D20—	20	276,445		27	276,461
	62	276,383		561	276,392		380	276,413	D14—	60	276,430		42	276,446		31	276,462
D4—	119	276,382	D7—	16	276,398		434	276,414			276,431	D21—	5	276,448		33	276,463
D6—	300	276,397		39	276,399	D10—	32	276,415		84	276,432		6	276,449		53	276,464
	320	276,391		79	276,400		40	276,416		113	276,433		20	276,447			276,465
	366	276,385			276,401		106	276,417	D15—	7	276,434		65	276,450	D25—	1	276,466
	384	276,386			276,402		111	276,418		69	276,435			276,451		64	276,467
	390	276,384		360	276,403	D12—	91	276,419		122	276,436		218	276,452	D26—	28	276,468
	462	276,395		380	276,404		101	276,420		140	276,437	D23—	6	276,453	D28—	64	276,469
	468	276,429	D8—	10	276,405		174	276,421		146	276,438		7	276,454		64.3	276,470
	483	276,393		41	276,406		192	276,422	D16—	32	276,439		18	276,455			276,471
		276,394		96	276,407		211	276,423			276,440		55	276,456	D32—	1	276,472
	498	276,396		334	276,408	D13—	10	276,424	D17—	20	276,441		97	276,457		70	276,473
	548	276,388		360	276,409		12	276,425	D18—	3	276,442		123	276,458			

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P.—	11	5,340		5,343	54	5,346		5,349			
	20	5,341	43	5,344	68	5,347	76	5,350	5,352	82	5,354
	38	5,342	50	5,345		5,348	78	5,351	5,353	88	5,355

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01 : 4,483,645	4,483,530	4,483,307	4,484,084	4,483,642	4,483,406
04 : 4,483,076	4,483,566	4,483,323	4,484,132	4,483,684	4,483,448
4,483,088	4,483,584	4,483,356	4,484,134	4,483,692	4,483,467
4,483,154	4,483,614	4,483,380	4,484,153	4,483,712	4,483,663
4,483,225	4,483,616	4,484,176	4,484,213	4,483,745	4,483,864
4,483,291	4,483,622	09 : 4,483,086	4,484,268	4,483,762	4,483,872
4,483,416	4,483,654	4,483,149	4,484,296	4,483,765	20 : 4,483,078
4,483,630	4,483,665	4,483,168	4,484,335	4,483,766	4,483,198
4,483,720	4,483,677	4,483,419	13 : 4,483,090	4,483,767	4,483,207
4,484,191	4,483,693	4,483,435	4,483,126	4,483,910	4,483,401
4,484,269	4,483,695	4,483,455	4,483,195	4,483,943	4,483,562
4,484,345	4,483,706	4,483,457	4,483,277	4,483,950	4,483,890
05 : 4,483,102	4,483,756	4,483,472	4,483,278	4,483,980	4,484,063
06 : 4,483,037	4,483,769	4,483,600	4,483,505	4,483,987	21 : Re.31,739
4,483,039	4,483,773	4,483,618	4,483,572	4,484,001	4,483,256
4,483,060	4,483,775	4,483,685	4,483,577	4,484,013	4,483,262
4,483,065	4,483,793	4,483,821	4,483,588	4,484,030	4,483,361
4,483,069	4,483,835	4,483,982	4,483,624	4,484,116	4,483,851
4,483,075	4,483,882	4,484,021	4,483,683	4,484,125	4,483,967
4,483,093	4,483,896	4,484,045	4,483,808	4,484,222	4,484,254
4,483,096	4,483,925	4,484,058	17 : Re.31,742	4,484,323	22 : 4,483,057
4,483,108	4,483,929	4,484,069	4,483,044	4,484,324	4,483,130
4,483,119	4,483,964	4,484,075	4,483,045	4,484,326	4,483,267
4,483,133	4,483,978	4,484,098	4,483,047	4,484,357	4,483,462
4,483,137	4,483,992	4,484,127	4,483,083	18 : 4,483,241	4,483,689
4,483,175	4,484,026	4,484,173	4,483,084	4,483,311	4,483,800
4,483,188	4,484,035	4,484,175	4,483,104	4,483,548	4,483,949
4,483,223	4,484,036	4,484,177	4,483,106	4,483,672	4,484,066
4,483,233	4,484,078	4,484,220	4,483,128	4,483,723	23 : 4,484,141
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4,483,317	4,484,154	4,484,328	4,483,239	4,484,040	4,483,849
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4,483,341	4,484,233	4,483,054	4,483,359	4,484,221	4,484,195
4,483,347	4,484,249	4,483,063	4,483,371	4,484,226	4,484,265
4,483,364	4,484,272	4,483,120	4,483,377	4,484,227	8,243,652
4,483,373	4,484,275	4,483,255	4,483,402	4,484,228	25 : Re.31,743
4,483,393	4,484,281	4,483,319	4,483,427	4,484,229	4,483,164
4,483,396	4,484,282	4,483,339	4,483,438	4,484,355	4,483,197
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4,483,456	4,484,307	4,483,533	4,483,473	4,483,115	4,483,465
4,483,468	4,484,311	4,483,636	4,483,474	4,483,131	4,483,512
4,483,478	4,484,334	4,483,664	4,483,506	4,483,132	4,483,744
4,483,481	4,484,342	4,483,791	4,483,526	4,483,220	4,483,759
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4,483,498	3,835,464	4,483,895	4,483,534	4,483,247	4,483,921
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